United States Air Force
611th Civil Engineer Squadron

Elmendorf AFB, Alaska

Final
Baseline Risk Assessment Report
Galena Airport
Alaska

Volume 4 - Addendum

March 1996

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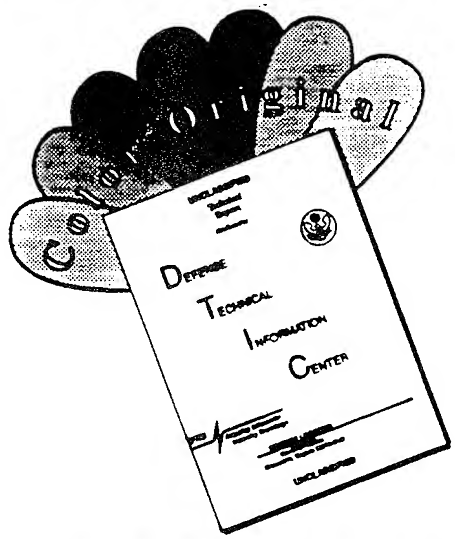

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United States Air Force
611th Civil Engineer Squadron

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Final

Baseline Risk Assessment for the Southeast Runway Fuel Spill Site and the Control Tower Drum Storage Area, South

Volume 4 - Addendum

March 1996

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EXECUTIVE SUMMARY

The U.S. Air Force (USAF), under the Installation Restoration Program (IRP), has conducted a remedial investigation (RI) at Galena Airport (formerly Galena Air Force Station). Within the framework of the IRP, the objective of the RI is to evaluate past hazardous waste disposal and spill sites at Galena Airport. The RI determines the nature and extent of possible contamination, identifies site physical characteristics that may affect contaminant distribution, and defines possible migration pathways.

A baseline risk assessment (BRA) was conducted to support the RI. The BRA determines the potential threat (if any) to human health and/or the environment attributable to the sites under investigation. Remedial actions will be developed for sites that pose an unacceptable threat to either human health or the environment.

ES.1 Background

Volumes 1-3 of this BRA report describe the environmental setting in the vicinity of Galena Airport, document the methods used to evaluate risk, and present the results of the risk assessment for three IRP sites at Galena Airport:

1. The Fire Protection Training Area (FPTA);
2. The POL Tank Farm; and
3. The West Unit.

The BRA was performed for these three sites using data from field investigations conducted during 1992, 1993, and 1994.

This addendum (Volume 4) presents an assessment of the current and possible future risks to human health and the environment potentially attributable to two additional IRP sites at Galena Airport:

1. The Southeast Runway Fuel Spill; and
2. The Control Tower Drum Storage Area, South (CTDSA).

The RI was completed for these two sites after additional field investigations were conducted during the summer of 1995.

ES.2 Human Health Assessment

The overall strategy for the human health assessment as well as the technical approach used for individual steps conform to U.S. Environmental Protection Agency (USEPA) recommendations (USEPA, 1989). Risks were evaluated for a range of potentially exposed human populations, including on-base residents, off-base (Galena) residents, on-base workers, and on-base boarding school students (hypothetical). The results of the human health assessment are presented as cancer risk estimates (an estimate of the incremental probability of developing cancer) and noncancer hazard indices (the ratio of an estimated exposure level to a level considered unlikely to cause adverse effects, summed for all chemicals with similar toxic endpoints).

For carcinogenic effects, the USEPA Superfund site remediation goal set forth in the National Contingency Plan (NCP) designates a cancer risk of 10^{-4} (1 in 10,000) to 10^{-6} (1 in one million). This range is designed to be protective of human health and to provide flexibility for consideration of other factors in risk management decisions. A cancer risk of 1 in one million is considered the *de minimis*, or a level of negligible risk. A cancer risk higher than 1 in one million is not necessarily considered

unacceptable. The State of Alaska plans to use a cancer risk level of 10^{-5} (1 in 100,000) in making risk management decisions (USAF, 1996b). For noncarcinogenic effects, the Superfund site remediation goal is a total hazard index (HI) of 1 for chemicals with similar toxic endpoints.

Of the numerous chemicals detected in environmental media at the two sites, only one chemical poses an estimated risk in excess of 1 in one million: beryllium in groundwater at the Southeast Runway Fuel Spill site. Estimated noncancer HIs are below 1, the Superfund site remediation goal for noncarcinogens, for all scenarios at both sites. An evaluation of combined impacts indicates that combining scenarios (e.g., child and adult), or adding individual site contributions to media at the same location, does not substantially increase the estimated cancer risks or noncancer HIs.

Risks associated with residual petroleum at the sites are addressed by quantifying risks for individual chemicals that are components of the residual petroleum. The results of the risk assessment can be used to evaluate the need to remediate diesel range organics (DRO) and gasoline range organics (GRO), but are not intended to be used to establish alternate cleanup levels for DRO and GRO. Remediation issues related to DRO, GRO, and free product are to be addressed outside the risk assessment.

Southeast Runway Fuel Spill Site

Estimated incremental cancer risks for all scenarios except the current and future Old Town Galena residents are below 1 in one million, considered the *de minimis*, or level of negligible risk. Estimated risks for the current Old Town Galena resident range from an average of 3 in one million to a reasonable maximum of 3 in 100,000 for an adult and from 4 in one million to 1 in 100,000 for a child. These risk estimates are within the Superfund risk range goal for carcinogens of 1 in 10,000 to 1 in one million. Estimated risks for the future Old Town Galena resident range from an average of 3 in 100,000 to a reasonable maximum of 2 in 10,000 for an adult and from 2 in 100,00 to 3 in 100,000 for a child. The reasonable maximum estimate for the adult exceeds the high end of the Superfund risk range goal.

In the current Old Town Galena resident scenario, ingestion of fruits and vegetables that take up beryllium from the shallow groundwater (either through irrigation or subirrigation) at the location of the gardens southwest of the site contributes the majority of the risks (97%) in all cases. Risks associated with exposure to all other chemicals are negligible. Likewise, in the future Old Town Galena resident scenario, 99% of the estimated risk in all cases is attributable to beryllium in groundwater. Ingestion of groundwater containing beryllium contributes most (85-95%) of the estimated risk; ingestion of fruits and vegetables that take up beryllium from the shallow groundwater (either through irrigation or subirrigation) at gardens in Old Town Galena contributes risks that exceed 1 in one million in some cases. Again, risks associated with exposure to all other chemicals are negligible.

Beryllium is a chemical of potential cancer in groundwater at the site because the background comparison concluded that average beryllium concentrations in groundwater at the site exceeded average beryllium concentrations in background groundwater. However, the level of confidence in this conclusion is rated as weak, based on the p-value of the comparison (0.0630). Moreover, the maximum detected concentration in groundwater at the site (0.00394 mg/L) is lower than the calculated background upper tolerance limit (UTL) for beryllium in groundwater (0.005 mg/L). It is also lower than the USEPA maximum contaminant level (MCL)

and maximum contaminant level goal (MCLG) for drinking water, which are both 0.004 mg/L. There is no reason to suspect that concentrations of beryllium in groundwater at this site might be elevated above background; although beryllium and beryllium alloys are sometimes used for various types of instrument springs, control parts, valves, and airplane carburetors and instruments, it is unlikely that these possible uses have resulted in elevated beryllium concentrations in groundwater at this site. Therefore, the estimated risks associated with exposure to beryllium at this site are probably no higher than risks from exposure to background concentrations of beryllium.

Moreover, the methodologies used to model the migration of beryllium in the groundwater from the Southeast Runway Fuel Spill site to Old Town Galena, and to estimate uptake by fruits and vegetables from groundwater, are conservative (i.e., health protective). The groundwater modeling accounted only for horizontal dispersion. Vertical dispersion was ignored. The "source" was defined as 100 ft long with a concentration of 0.00394 mg/L (the maximum detected concentration). As a result, the modeled concentration at Old Town Galena (0.00113 mg/L) is higher than that detected at two of the four monitoring wells located at the site.

To calculate uptake by fruits and vegetables grown in gardens southwest of the site and in gardens in Old Town Galena, it was assumed that 100% of water required by the plants is supplied by shallow groundwater, either through irrigation or subirrigation. The depth of the groundwater fluctuates from very close to the surface to 15 to 20 ft below surface over the course of the year. It is unlikely that the roots of garden plants are in direct contact with the groundwater (and thus are subirrigated) for a substantial portion of the growing season. It is more likely that precipitation and irrigation water from sources other than the shallow groundwater supply some or all of the water required.

Finally, most residents of Old Town Galena have drinking water trucked in from the city well in the New Town area, upgradient from Galena Airport. There are, however, at least seven private wells still in use in Old Town Galena (USAF, 1995b). Four of these wells, all less than 60 ft deep, were sampled in 1992 and 1993 as part of the RI. Results from beryllium were reported as not detected (ND); however, the detection limit was 0.002 mg/L.

If, as the evidence suggests, beryllium is not elevated above background in the groundwater at the Southeast Runway Fuel Spill site and it is removed as a chemical of potential concern, the risks posed by the site are negligible for all human populations that might encounter site-related contaminants. Estimated risks associated with exposure to beryllium in the groundwater downgradient from the site are not significantly different from exposure to background concentrations of beryllium in the groundwater. On the basis of the results of the human health assessment, remedial action at the Southeast Runway Fuel Spill site is not warranted.

Control Tower Drum Storage Area, South

The estimated incremental cancer risks for all other scenarios at the CTDSA are below 1 in one million. Estimated noncancer HIs are below 1 for all scenarios. On the basis of the results of the human health assessment, remedial action at the CTDSA is not warranted.

ES.4 Ecological Assessment

Ecological risk assessment is defined as a process that evaluates the likelihood that adverse ecological effects may occur, or are

occurring, as a result of exposure to one or more stressors (e.g., chemical contaminants). The methodology used to conduct the ecological assessment conforms to USEPA guidance (USEPA, 1992b). An in-depth ecological assessment problem formulation was completed for the Galena Airport (USAF, 1995e) prior to conduct of the ecological assessment.

Species evaluated for assessment of terrestrial ecosystems included terrestrial invertebrates, the American robin, the American kestrel, the meadow vole, and the red fox. These species represent several trophic levels in a terrestrial environment and include several upper trophic level species (kestrel and fox). Aquatic invertebrates and the spotted sandpiper, which feeds on aquatic invertebrates, were selected to evaluate the semiaquatic ecosystem (mudflats) at the edge of the Yukon River. The northern pike, a species of fish that is present in the Galena area for most of the year, represented the aquatic ecosystem in the Yukon River. Pike is not a migratory species, as are species of salmon that are present in the Galena area for only short periods of time.

The "quotient method" (Barnthouse et al., 1982; Urban and Cook, 1986) was used to arithmetically compare a toxicity benchmark (TB) concentration (the measurement endpoint) with the chemical-specific intake for each assessment endpoint species. An ecological quotient (EQ) is calculated by the general form:

$$EQ = \text{Intake (mg/kg-day)}/\text{TB (mg/kg-day)}.$$

The TB is a reasonable estimate of a contaminant concentration that may result in adverse effects to an assessment endpoint species, if exceeded in a given environmental medium.

The results of the quotient method, the EQ values, were placed in three categories as follows:

- $EQ < 1$. Those contaminants with EQs less than one were assumed to pose no significant adverse ecological impacts;
- $10 > EQ \geq 1$. Contaminants with EQs greater than or equal to 1 and less than 10 were classified as contaminants of possible concern; and
- $EQ \geq 10$. Contaminants with EQs greater than or equal to 10 were classified as contaminants of probable concern.

A high EQ does not necessarily mean that the local population of the species evaluated is at risk. Therefore, using the EQs, the ecological significance of potential impacts was also evaluated. A weight-of-evidence analysis of potential effects on assessment endpoint species was conducted by reviewing the physical, chemical, ecological, and toxicological properties of chemicals with EQs above 1. On the basis of both the EQ values and the weight-of-evidence evaluation, each chemical with an EQ value greater than 1 was rated for potential to cause local population impacts. This population impacts rating (high, medium, or low) provides the initial guidance for the decision-making process. Table ES-1 summarizes the weight-of-evidence findings for local populations of species evaluated in this assessment.

Southeast Runway Fuel Spill Site

Terrestrial Ecosystem—No EQ values above 1 were obtained in this ERA for the invertebrate, red fox, or kestrel. Results of the risk evaluation for plants were inconclusive, except for lead. Given the extreme conservatism associated with the terrestrial toxicity benchmark, the low EQ (1.02) for plants, the lack of impacts to the higher trophic levels, and the fact that site lead levels are not higher than general

Table ES-1
Summary of Potential for Local Population Impacts

Chemicals with EQs > 1	Assessment Endpoint Species								
	Terrestrial Ecosystem						Semiaquatic Ecosystem (Yukon River Mudflats)		Aquatic Ecosystem (Yukon River)
	Terrestrial Invertebrates	American Robin	American Kestrel	Terrestrial Plants	Meadow Vole	Red Fox	Aquatic Invertebrates	Spotted Sandpiper	Northern Pike
Southeast Runway Fuel Spill Site									
Benzo(a)anthracene	--	--	--	--	Low	--	--	--	--
Benzo(a)pyrene	--	--	--	--	Low	--	--	--	--
Benzo(b)fluoranthene	--	Low/Medium	--	--	--	--	--	--	--
Benzo(g,h,i)perylene	--	--	--	--	Low	--	--	--	--
bis(2-ethylhexyl)phthalate	--	Low	--	--	--	--	--	--	--
Fluorene	--	--	--	--	--	--	Low	--	--
Lead	--	--	--	Low	--	--	--	--	--
2-Methylnaphthalene	--	--	--	--	--	--	Low	--	--
Control Tower Drum Storage Area, South									
DDE	NA	NA	NA	NA	NA	NA	--	Low	--

NA = Not applicable
-- = EQ < 1 or not quantified (not a chemical of potential ecological concern at the site in the medium that is contacted)

background agricultural levels, adverse effects of lead on terrestrial plants are not expected. Several polynuclear aromatic hydrocarbons (PNAs) were noted in the meadow vole with EQs greater than 1 (benzo(a)anthracene, benzo(a)pyrene, and benzo(g,h,i)perylene). Although all of these EQs were greater than 1, they were also less than 10, and are categorized as indicating possible risk; however, the potential for risk from PNAs in this EQ category is likely to be insignificant because current data indicate that vertebrates metabolize PNAs (Eisler, 1987), or the PNAs remain bound to soil particles in the gastrointestinal tract and therefore are not accumulated (ATSDR, 1993). Owing to the low EQ levels of these PNAs, low concentrations of PNAs when compared with other sites, lack of impact to the red fox, and physical and biological processes that limit the vertebrate toxicity, the effects of PNAs on the mammals in the terrestrial ecosystem are expected to be minimal.

As with the plant toxicity, little soil invertebrate toxicity information was found. Several TBs were identified; however, none of the EQ results were above 1. Additionally, there were no EQs above 1 for the kestrel. For the robin, benzo(b)fluoranthene was the only contaminant evaluated with an EQ above 10 at 10.9. The only other chemical with an EQ above 1 for the robin was bis(2-ethylhexyl)phthalate, with an EQ of 1.09. As described above, the potential for risk from PNAs is likely to be insignificant because current data indicate that vertebrates metabolize PNAs (Eisler, 1987), or the PNAs remain bound to soil particles in the gastrointestinal tract and therefore are not accumulated (ATSDR, 1993). Information is limited on avian PNA toxicity. A "worst case" exposure is represented in this assessment by the TB. The applicability of this exposure route is dependent on several factors, including the form of the PNAs at the Southeast Runway Fuel Spill site and the use of the Southeast Runway Fuel Spill site as a breeding area for avian species. During the yearly flood, soil contaminants such as PNAs could be transported to the surface by the rising waters. These contaminated surface waters could potentially contact ecological receptors, especially as water accumulates at the dike. The Southeast Runway Fuel Spill site is vegetated with alders and other tall vegetation on the slope of the dike. Perching birds are commonly observed and nesting could occur in this vegetation. Because of the high quality of habitat along the dike, the propensity of birds, possible transport and exposure mechanisms of contaminants to avian receptors, adverse impacts to avian receptors (especially eggs and young birds) could occur; however, the ability of vertebrate systems to metabolize PNAs and the strong adsorption of these compounds to soils limits the exposures and toxicities. Possible impacts on avian receptors at the Southeast Runway Fuel Spill site by PNAs are therefore given a medium rating.

The EQ for bis(2-ethylhexyl)phthalate in the robin was calculated to be 1.09. Bis(2-ethylhexyl)phthalate is bioconcentrated and the compound has been observed in invertebrates, fish, and terrestrial organisms; however, accumulation of bis(2-ethylhexyl)phthalate is likely to be minimized by metabolism, and biomagnification in the food chain is not expected to occur. This has been confirmed by the detection of metabolites in animal tissues (ATSDR, 1991a). Because of the potential for metabolism of bis(2-ethylhexyl)phthalate, lack of adverse impacts to the kestrel, and low EQ in the robin, the effects of bis(2-ethylhexyl)phthalate to the avian ecosystem at the Southeast Runway Fuel Spill site are expected to be minimal.

This assessment indicates that impacts on perching birds, especially eggs and young, might occur due to the presence of PNAs in the surface soil. However, numerous birds have been noted at the site.

Semiaquatic Ecosystem—Semiaquatic exposures considered groundwater beneath the Southeast Runway Fuel Spill site that potentially could migrate to the Yukon River, where expo-

sure to the aquatic invertebrates and spotted sandpiper potentially could occur. None of the chemicals of potential ecological concern evaluated in this assessment showed an EQ above 1 for the spotted sandpiper. Ambient water quality criteria (AWQC) were used as the measurement endpoints for evaluation of the aquatic invertebrates when they existed. AWQC are highly conservative since they are designed to protect most aquatic life. 2-Methylnaphthalene and fluorene are the only compounds with EQs greater than 1 for the aquatic invertebrate. PNAs vary substantially in their toxicity to aquatic organisms. In general, toxicity and bioconcentration factors tend to increase as molecular weight increases (Eisler, 1987). Fluorene and 2-methylnaphthalene are both low molecular weight PNAs with molecular weight values of 166.2 and 142.2, respectively (ATSDR, 1993), indicating low potential for bioconcentration or toxicity. PNA levels in fish and higher trophic levels are usually low because they are rapidly metabolized (Eisler, 1987). Because of the low potential for bioconcentration or toxicity from low molecular weight PNAs, and the ability of higher trophic levels to metabolize PNAs, the adverse impacts from fluorene and 2-methylnaphthalene are expected to be minimal.

Aquatic Ecosystem—EQs were less than 1 at the aquatic ecosystem (Yukon River) for the northern pike.

Control Tower Drum Storage Area

Terrestrial Ecosystem—Terrestrial receptors were not considered owing to the lack of habitat at the CTDSA.

Semiaquatic Ecosystem—None of the chemicals of potential ecological concern evaluated in this assessment showed an EQ above 1 for the aquatic invertebrate. AWQC were used as the measurement endpoints for these assessment endpoint species when they existed. No dilution or volatility factors were applied to the discharged concentrations. 4,4'-DDE had an EQ value greater than 1(6.03) for the spotted sandpiper, indicating possible risk. There were no other chemicals of potential ecological concern noted to have EQs above 1 for the spotted sandpiper. DDT and its metabolites (DDE and DDD) are organochlorine pesticides that are recalcitrant and lipophilic compounds that can enter the food chain easily and progressively biomagnify to organisms at the top of the food chain, such as fish-eating birds. Because of the extensive past use of DDT worldwide, and the persistence of the compounds, these chemicals are virtually ubiquitous and are continually being transformed and redistributed in the environment. A steady state bioconcentration factor of 12,000 for rainbow trout was applied to estimate the concentration in the aquatic invertebrate as the food for the spotted sandpiper. This value is based on ingestion of fish lower on the food chain and exposure to the surrounding media (i.e., water and sediment) (ATSDR, 1994). An analysis of the intake model for the spotted sandpiper indicates that 99% of the EQ contribution was from invertebrate ingestion and only 1% was from ingestion of water. Organochlorine pesticides such as DDT were used extensively at the Galena Airport for insect control. The CTDSA does not represent a unique source for DDT and its metabolites.

Aquatic Ecosystem—No chemicals were found to pose risk to the northern pike in the Yukon River.

Section 1
INTRODUCTION

The U.S. Air Force (USAF), under the Installation Restoration Program (IRP), has conducted a remedial investigation (RI) at Galena Airport (formerly Galena Air Force Station), Alaska. Figure 1-1 in Volume 1 shows the location of Galena Airport in Alaska. Within the framework of the IRP, the objective of the RI is to evaluate past hazardous waste disposal and spill sites at Galena Airport. The RI determines the nature and extent of possible contamination, identifies site physical characteristics that may affect contaminant distribution, and defines possible migration pathways.

This baseline risk assessment (BRA) was conducted to support the RI. The BRA determines whether there is a possible threat to human health and/or the environment attributable to the sites under investigation. For sites that pose an unacceptable threat to either human health or the environment, remedial actions will be developed.

1.1 IRP Sites

There are 13 identified IRP sites at the Galena Airport. Figure 1-2 in Volume 1 shows the location of the IRP sites, source areas, and other areas of interest at the installation.

Some sites have been closed or are proposed for closure. A BRA is not scheduled for the following sites at this time:

- SS002 Control Tower Drum Storage Area;
- ST003 Petroleum, oils, and lubricants (POL) Fuel Line Leak;
- ST004 JP-4 Fuel Truck Spill; and
- SS007 Drums, Perimeter Dike.

One site, SS006 Waste Accumulation Area, has been incorporated into the West Unit (ST009). Three other sites, LF008-Main Landfill, LF011-Alternate Landfill, and LF012-Southwest Runway Dump, will be addressed separately outside the IRP process.

Five sites remain "active" IRP sites:

- FT001 Fire Protection Training Area (FPTA);
- ST005 POL Tank Farm;
- ST009 West Unit;
- ST010 Southeast Runway Fuel Spill; and
- SS013 Control Tower Drum Storage Area, South (CTDSA).

The RI was completed for the FPTA, the POL Tank Farm, and the West Unit after the 1994 field season. The first three volumes of this BRA provide details of the environmental setting in the area of Galena Airport, describe the risk assessment methodology used, and document the results of the risk assessment for the FPTA, the POL Tank Farm, and the West Unit.

Additional sampling and analysis were conducted during the summer of 1995 at the Southeast Runway Fuel Spill site and the CTDSA. This addendum (Volume 4 of the BRA) focuses on the two sites for which the RI was completed in 1995. Figure 1-1 shows the location of the two sites and other sites in the immediate vicinity.

This addendum was prepared separately from the other volumes of the BRA to accommodate differing timelines for making site management decisions. Descriptions of the environmental setting and risk assessment methodology that are provided in the first three volumes are not repeated in this addendum.

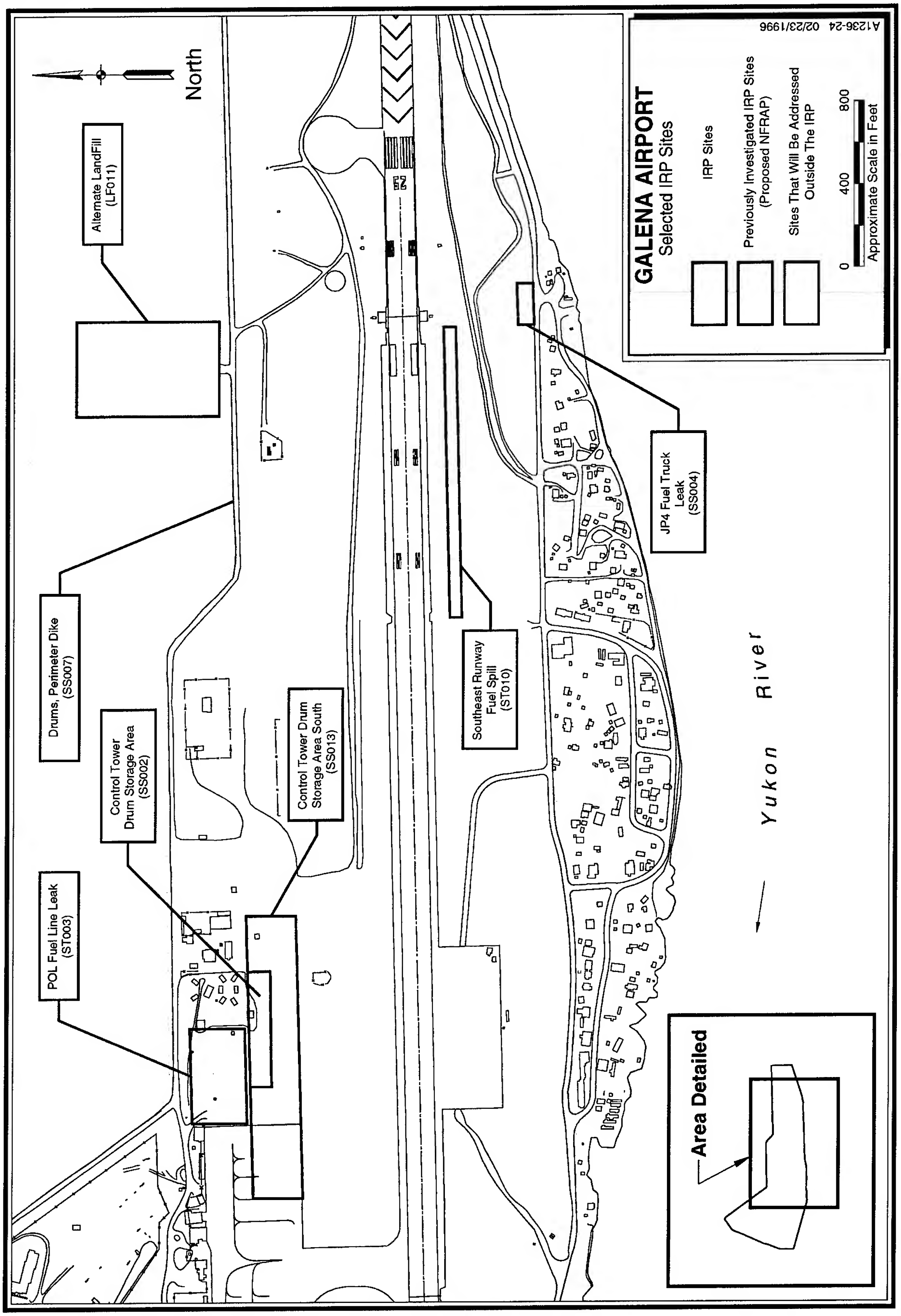


Figure 1-1. Selected IRP Sites, Galena Airport, Alaska

1.2 Purpose and Objectives of the Baseline Risk Assessment

The purpose of this BRA is to identify and characterize the current and potential future threats posed by the sites under investigation to humans living and working in and around Galena Airport and to the ecology of the area. The BRA has three specific objectives:

1. To determine the average and reasonable maximum carcinogenic risk (an estimate of incremental risk of developing cancer) to humans attributable to the sites under investigation;

2. To characterize the average and reasonable maximum likelihood for noncarcinogenic effects in humans; and

3. To evaluate the likelihood that adverse ecological effects may occur.

Average risk is a measure of the central tendency of the risk distribution. The reasonable maximum risk is the highest risk that is reasonably expected to occur.

Within the broader context of the IRP process, the BRA results will be used to make one of the following remedial action recommendations: 1) consider interim remedial action for sites with high current estimated human health risks and/or probable ecological risk; 2) negotiate the need for remedial action for sites with intermediate estimated human health risks and/or possible ecological risk; and 3) pursue no further response action for sites with negligible estimated human health or ecological risks. Section 1.2 in Volume 1 provides a more detailed discussion on how the BRA results are used to support these recommendations.

1.3 Organization of the Baseline Risk Assessment Addendum

This report is organized into six sections. Following the Introduction (Section 1), Sections 2 and 3 each describe the site, summarize data available from the RI, and present the results of the human health and ecological assessments for the Southeast Runway Fuel Spill site and the CTDSA, respectively. Section 4 addresses the potential combined impacts of individual sites and individual scenarios, considering the two sites that are the subject of this addendum, plus the three sites evaluated in Volumes 1-3. Section 5 summarizes conclusions and recommendations. Finally, Section 6 lists references. The appendices supply supporting documentation for the assessments that were conducted.

Section 2
SOUTHEAST RUNWAY FUEL SPILL

Section 2 contains a site-specific BRA for the Southeast Runway Fuel Spill site. Section 2.1 provides a description of the site and Section 2.2 summarizes data evaluation. Section 2.3 presents the human health risk assessment results. Section 2.4 presents the ecological assessment results.

2.1 Site Description

The Southeast Runway Fuel Spill site is located inside of the perimeter dike in a low-lying area just south of the airstrip. It includes a shallow ditch that runs roughly parallel to the runway (Figure 1-1). This is the location of a reported fuel release that occurred during the winter of 1984.

The site is bounded to the north by the runway and to the south by the dike road. The site is vegetated primarily with grass; the state mows the area periodically to keep willows or other tall vegetation from growing too near the runway. Several gardens, maintained by inhabitants of Galena, grow along the southwestern edge of the site. Surface drainage from the ditch flows to the west and accumulates against a dike. In the spring, standing water is common in the lowest portions of the site. Accumulated water evaporates or infiltrates the soil.

The Southeast Runway Fuel Spill site is located entirely within the building restriction line (see Figure 2-2 in Volume 1); therefore, future development/building construction in this area is not possible as long as the airport remains operational.

2.1.1 Sources of Contamination

The site was reportedly contaminated in 1984 from a pipeline leak. During an interview, a Galena resident stated that a spill occurred at this location when the ground was frozen and covered with snow (Danny Patrick, personal communication, 4 October 1992). The source of the spill appeared to be the 4-in.-diameter diesel pipeline that leads from the barge loading area under the runway to the POL Tank Farm. The spill volume is unknown, but fuel reportedly covered the ground and accumulated in the drainage ditch south of the runway. The accumulated fuel was reported to have been removed from the ground before significant amounts could infiltrate the frozen soil.

The ruptured diesel line was replaced with a 6-in.-diameter diesel pipeline and 8-in.-diameter JP-4 pipeline that were rerouted along the south side of the runway in 1988 (21st Civil Engineering Squadron, drawing no. 86E008, 3 March 1986 with changes made in 1988). The abandoned 4-in.-diameter pipeline was to be removed where it was above ground or interfered with the installation of the new pipeline. Where the old pipeline ran under the runway, it was to be abandoned in place for a distance of 25 ft on either side of the runway shoulder. All piping that was abandoned in place was to be drained, flushed, and capped with ¼-in. steel plates or plugged with concrete.

A barrel dump was also located at the Southeast Runway Fuel Spill site. This dump is noted on the plot plan for the fuel line abandonment and reinstallation project. Several drums can be seen protruding from the ground at the site. In addition to the fuel line leak and barrel dump, other potential sources of contamination have been identified at the Southeast Runway Fuel Spill site (Assistant Airport Manager Dick Evans, personal communication, 17 July 1995). A tar pit, which has been covered over with soil, was once present at the site, and some patches of tar are still visible at the surface. A building that was located in the area burned down; the contents or purpose of the building is unknown.

A nearby site (JP-4 Fuel Tank leak, SS004), shown in Figure 1-1, was investigated during the Stage 1 RI (USAF, 1989) in response

to an accident that resulted in a POL tank truck releasing approximately 4000 gal. of JP-4 fuel. During that study, petroleum hydrocarbons were detected in the soil. The contaminated soil was removed and no further action was recommended. The JP-4 spill from the tanker did not contribute to the contamination at the Southeast Runway Fuel Spill site.

2.1.2 RI Activities

An investigation was conducted at the Southeast Runway Fuel Spill site during the 1993 and 1995 field seasons. Field screening using soil gas, field infrared (IR) analysis of soils, and laboratory analysis for diesel range organics (DRO) and gasoline range organics (GRO) of direct push technology (DPT) water samples was conducted to determine the extent of fuel contamination at the site. Laboratory confirmation analysis was performed for surface and subsurface soils and groundwater to determine the nature and concentration of site contaminants.

During 1993, field screening was conducted southeast of the main runway to document the presence of hydrocarbons in the soil and to determine the extent of the fuel spill along the ditch. Twenty-four soil vapor samples were collected along the ditch at depths of 5 ft. The samples were analyzed with a photoionization detector (PID) and catalytic hydrocarbon detector (CAT).

On the basis of the results of the soil gas survey, 16 shallow soil samples were collected from locations encompassing the highest soil vapor concentrations and analyzed in the field IR laboratory to determine the presence of hydrocarbons in the soil. Sample results confirmed the east-west extent of contamination found with the soil gas screen.

During 1995, additional investigation activities were conducted at the Southeast Runway Fuel Spill site to confirm the extent of soil contamination and determine the nature of the contaminants and the extent of potential groundwater contamination. Additional soil gas data were gathered south of the ditch line to help direct sampling activities. On the basis of the soil gas data, DPT water samples were collected and analyzed for DRO. These data were then used to determine the optimum locations of monitoring wells and soil samples.

Three soil borings were sampled at two intervals each along the ditch line. Soil samples were also collected at a depth of 10 to 12 ft below ground level (bgl) from the well bore at three of the four monitoring well locations at the Southeast Runway Fuel Spill site. In addition, a surface soil sample was collected at one of four monitoring well locations. Groundwater samples were collected from all four monitoring wells installed at the site. The analytical results for soil and water samples are presented in Appendix A of the RI report (USAF, 1995b).

2.1.3 RI Conclusions

On the basis of the field screening and laboratory confirmation results, it appears that the reported fuel line rupture occurred near the eastern end of the ditch. Soil contamination due to the fuel leak is limited to the ditch line, and groundwater contamination extends downgradient (south and west) of the ditch. Contaminants of concern include DRO; GRO; and benzene, toluene, ethylbenzene, and xylenes (BTEX) in the immediate vicinity of the leak; however, only DRO were detected any distance from the source. This is consistent with site evidence that indicates reducing conditions near the leak. The high contaminant loading and low permeability in the immediate vicinity of the leak appears to have depleted the available oxygen, limiting the microbial action necessary to break down the BTEX components. Lower concentrations of DRO in the surface soils along the ditch may reflect residual diesel from the spill or the presence of hydrocarbons in runoff from the runway. Although the ground was reportedly frozen at the time of the pipeline rupture, subsurface soil contamination at the western edge of the plume may indicate the

infiltration of fuels flowing along the ditch upon encountering coarser grained soils.

The presence of other site contaminants, such as chlorinated solvents in groundwater and polynuclear aromatic hydrocarbons (PNAs) in soils, are likely to be the result of other sources at the site, such as the drums, the tar pit, or the burned-down building.

2.2 Data Evaluation

Data available from the RI (USAF, 1995b) were used to evaluate human health risks and ecological effects posed by the Southeast Runway Fuel Spill site. Analytical results from a total of four surface soil samples, six subsurface soil samples, and four groundwater samples made up the risk assessment data set. Table 2-1 lists the analytical methods used to test the soil and water samples during the 1995 RI.

Figure 2-1 presents a conceptual diagram for the site from the RI report (USAF, 1995b). This diagram provides a plan view, a geologic cross section, and a table that lists the range of detected concentrations for analytes that have exceeded the RI screening criteria (identified in the key to the figure). The plan view shows the location of all analytical data points (soil samples, monitoring well locations, and DPT water samples). The area of contamination, as determined by soil gas data, is shown on the plan view. The plan view and the geologic cross section can be used in conjunction to provide a three-dimensional visualization of site characteristics and contaminants.

Statistical analyses, in accordance with methods summarized in Section 3 of Volume 1 and described in detail in Appendix A (Volume 2), were conducted on the available data to identify contaminants that were:

1. Positively detected in at least one sample in a given medium;

2. Detected at levels substantially greater than levels detected in associated blank samples (at least one result that exceeds the blanks UTL); and

3. Detected at levels elevated above naturally occurring background levels.

Table 2-2 lists the chemicals that were positively detected in the various media at the Southeast Runway Fuel Spill site. These chemicals were subjected to blanks and background comparisons and to additional screening and evaluation for the human health assessment and the ecological assessment before they were identified *positively* as chemicals of potential concern (COPCs) for human health or chemicals of potential ecological concern (COPECs). Appendix 4A of this volume lists all chemicals that were tested in the various media and indicates, on a medium-specific basis, whether or not there were measurable results after conducting the blanks evaluation and whether or not the average site-related concentration is greater than the average background concentration (metals only).

An evaluation of the adequacy of detection limits was performed by comparing the minimum detection limit for each chemical eliminated as a COPC because it was not detected in a medium with the USEPA Region III residential RBCs. Appendix 4B contains the results of this detection limit screening process. The uncertainties associated with detection limits that are not low enough to detect risk-based concentrations are summarized in Section 2.3.5.

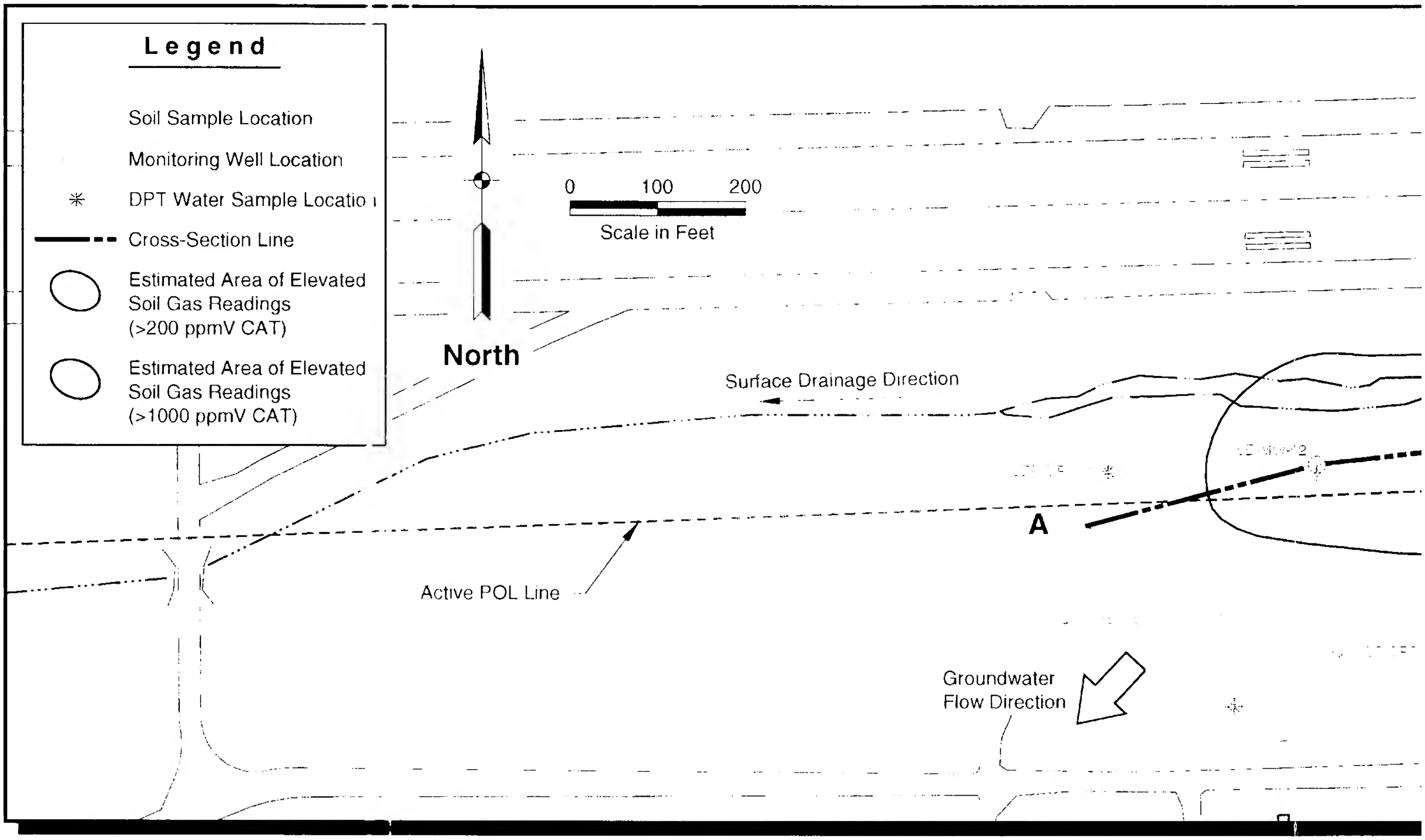
2.3 Human Health Risk Assessment Results

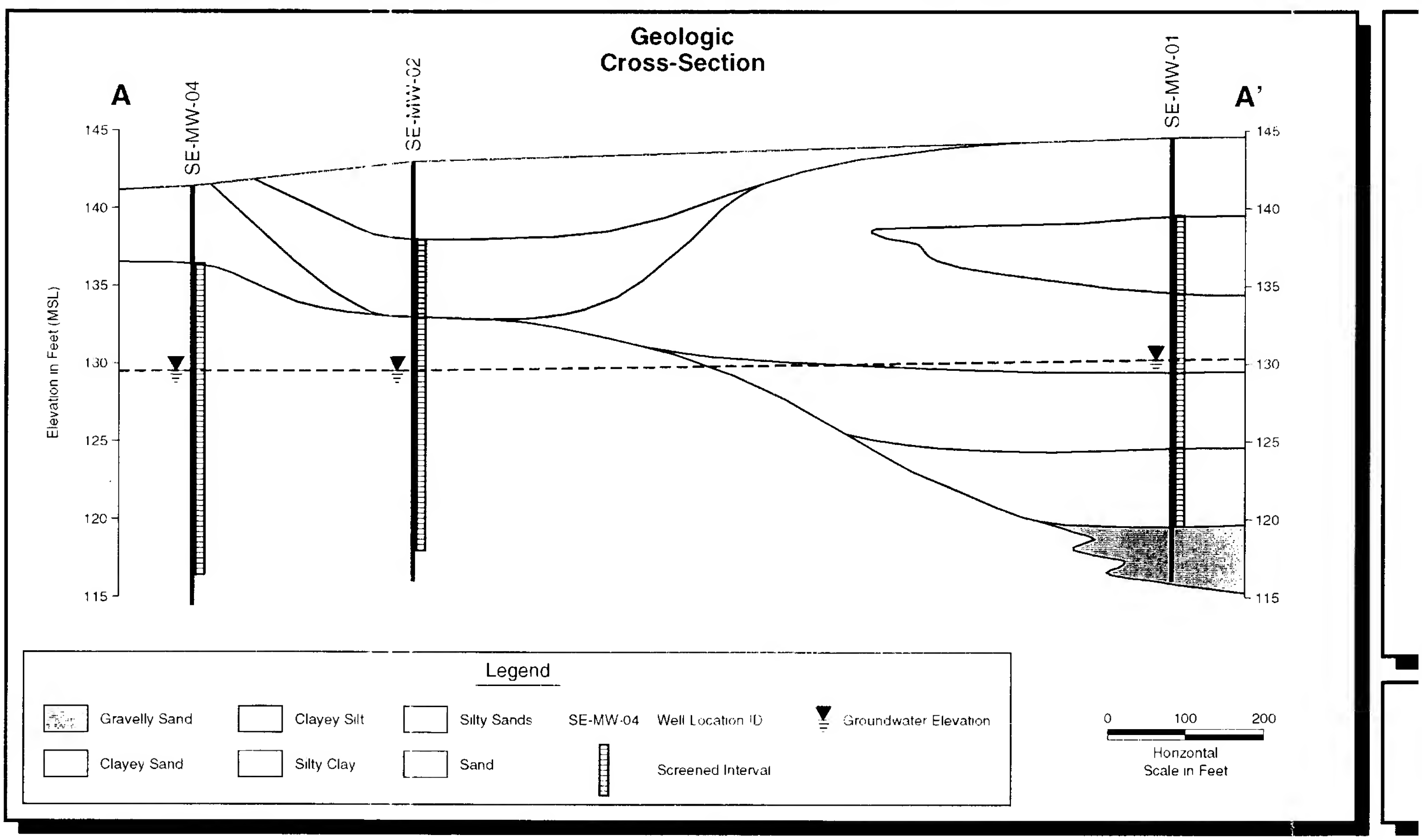
The human health evaluation for the Southeast Runway Fuel Spill site included identification of COPCs (Section 2.3.1), exposure assessment (Section 2.3.2), toxicity assessment (Section 2.3.3), risk characterization (Section 2.3.4), and uncertainty assessment (Section 2.3.5). These tasks were performed according to the methods specified in Section 3 of Volume 1. Section 2.3.6 summarizes conclusions of the human health risk assessment for the site and

Table 2-1
Analytical Methods Used at the Southeast Runway Fuel Spill Site
During the 1995 RI

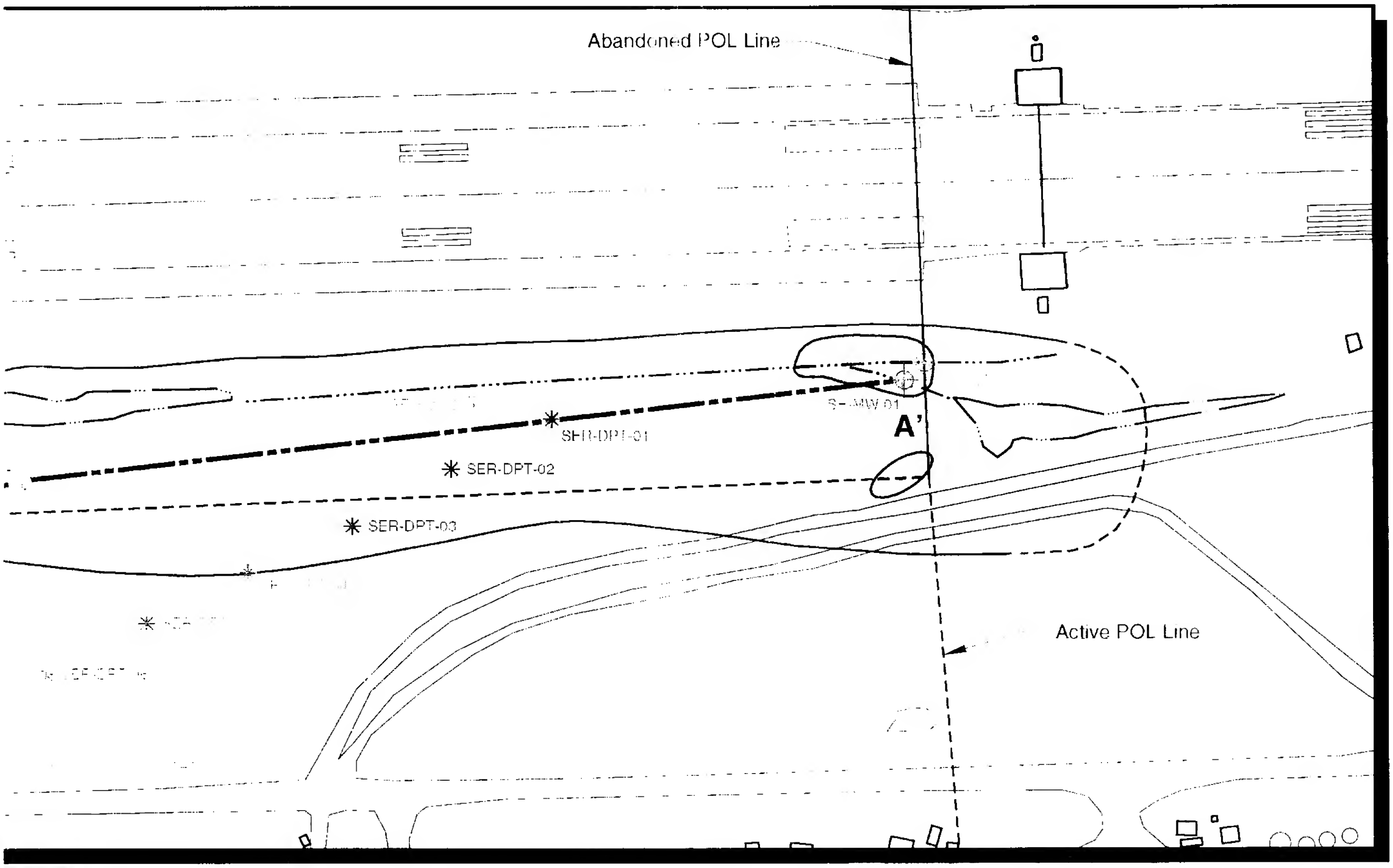
Parameter	Soil [a]	Water [b]
Alkalinity - Total (SM403)	NA	4
Specific Conductance (E120.1)	NA	4
pH (E150.1 - aqueous, SW9045 - solids)	--	4
Total Dissolved Solids (E160.1)	NA	4
Total Suspended Solids (E160.2)	NA	4
Temperature (E170.1)	NA	4
Turbidity (E180.1)	NA	4
Anions (E300)	NA	4
Nitrate-Nitrite (E353.1)	NA	4
Metals - ICP Screen (SW6010)	--	4
Lead (SW7421)	4/6	4
Semivolatile Organic Compounds (SW8270)	4/6	4
Volatile Organic Compounds (SW8240)	4/6	NA
Volatile Organic Compounds (SW8260)	NA	4
Diesel Range Organics (AK102)	4/6	4
Gasoline Range Organics (AK101)	4/6	4
Soil Moisture Content (SW846)	4/6	NA

[a] Number of surface soil samples/number of subsurface soil samples.
[b] Number of groundwater samples.
NA = Not applicable.
-- Analytical method not used for this medium.


Legend
Soil Sample Location
Monitoring Well Location
DPT Water Sample Locatio
Cross-Section Line
Estimated Area of Elevated Soil Gas Readings (>200 ppmV CAT)
Estimated Area of Elevated Soil Gas Readings (>1000 ppmV CAT)
North
0 100 200
Scale in Feet
Surface Drainage Direction
A
Active POL Line
Groundwater Flow Direction


Geologic Cross-Section
A
A'
SE-MW-04
SE-MW-02
SE-MW-01
Elevation in Feet (MSL)
145
140
135
130
125
120
115
Legend
Gravelly Sand
Clayey Sand
Clayey Silt
Silty Clay
Silty Sands
Sand
SE-MW-04 Well Location ID
Screened Interval
Groundwater Elevation
0 100 200
Horizontal Scale in Feet

2



Compounds Exceeding RI Screening Criteria

Analyte	Soils		Waters	
	Screening Criteria (µg/kg)	Range of Detections (µg/kg)	Screening Criteria (µg/L)	Range of Detections (µg/L)
Benzene	500 AK	340	5M	58
Ethylbenzene	15,000 AK	6,800		
Toluene	15,000 AK	4,500		
Total Xylenes	15,000 AK	19 - 43,000		
Benzo(a)pyrene	88 RC	550		
Dibenzo(a,h)anthracene	88 RC	95		
DRO	200,000 AK	2.6×10^4 - $1.8 \times 10^{[illegible]}$		
GRO	100,000 AK	$1.5 \times 10^{[illegible]}$ - $5.4 \times 10^{[illegible]}$		
Selenium			50 M	142
Thallium			2 M	204

Key:
AK - State of Alaska Cleanup Standard
RC - EPA Region III Risk-Based Concentration, Carcinogenic (Residential Soil Ingestion)
M - Maximum Contaminant Level

Galena Airport - Southeast Runway Fuel Spill

Conceptual Diagram and Summary of Compounds Exceeding Screening Criteria

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Figure 2-1. Conceptual Diagram for the Southeast Runway Fuel Spill (ST010)

Table 2-2
Analytes Detected at the Southeast Runway Fuel Spill Site

Analyte	Analytical Method	Groundwater	Surface Soil	Subsurface Soil
1,2-Dichloroethane	SW8260	D	--	--
2-Butanone (MEK)	SW8240	--	ND	D
2-Methylnaphthalene	SW8270	D	D	D
Acenaphthene	SW8270	D	ND	D
Acetone	SW8240	--	ND	D
Acetone	SW8260	D	--	--
Aluminum	SW6010	D	--	--
Anthracene	SW8270	ND	D	ND
Antimony	SW6010	D	--	--
Arsenic	SW6010	D	--	--
Barium	SW6010	D	--	--
Benzene	SW8240	--	ND	D
Benzene	SW8260	D	--	--
Benzo(a)anthracene	SW8270	ND	D	ND
Benzo(a)pyrene	SW8270	ND	D	ND
Benzo(b)fluoranthene	SW8270	ND	D	ND
Benzo(g,h,i)perylene	SW8270	ND	D	ND
Benzo(k)fluoranthene	SW8270	ND	D	ND
Benzyl alcohol	SW8270	D	ND	ND
Beryllium	SW6010	D	--	--
Cadmium	SW6010	D	--	--
Calcium	SW6010	D	--	--
Chloroethane	SW8260	D	--	--
Chloroform	SW8260	D	--	--
Chloromethane	SW8260	D	--	--
Chromium	SW6010	D	--	--
Chrysene	SW8270	ND	D	ND

Table 2-2
(Continued)

Analyte	Analytical Method	Groundwater	Surface Soil	Subsurface Soil
Cobalt	SW6010	D	--	--
Copper	SW6010	D	--	--
Dibenz(a,h)anthracene	SW8270	ND	D	ND
Dibromomethane	SW8260	D	--	--
Dibutyl phthalate	SW8270	D	ND	ND
Diesel Range Organics	AK102	D	D	D
Ethylbenzene	SW8240	--	ND	D
Ethylbenzene	SW8260	D	--	--
Fluoranthene	SW8270	ND	D	ND
Fluorene	SW8270	D	ND	D
Gasoline Range Organics	AK101	D	ND	D
Indeno(1,2,3-cd)pyrene	SW8270	ND	D	ND
Iron	SW6010	D	--	--
Lead	SW7421	D	D	D
Magnesium	SW6010	D	--	--
Manganese	SW6010	D	--	--
Methylene chloride	SW8240	--	D	D
Methylene chloride	SW8260	D	--	--
Molybdenum	SW6010	D	--	--
Naphthalene	SW8270	D	D	D
Nickel	SW6010	D	--	--
Phenanthrene	SW8270	D	D	D
Potassium	SW6010	D	--	--
Pyrene	SW8270	ND	D	ND
Selenium	SW6010	D	--	--
Silver	SW6010	D	--	--

Table 2-2
(Continued)

Analyte	Analytical Method	Groundwater	Surface Soil	Subsurface Soil
Sodium	SW6010	D	--	--
Tetrachloroethene	SW8260	D	--	--
Thallium	SW6010	D	--	--
Toluene	SW8240	--	ND	D
Toluene	SW8260	D	--	--
Trichloroethene	SW8260	D	--	--
Vanadium	SW6010	D	--	--
Zinc	SW6010	D	--	--
bis(2-Ethylhexyl)phthalate	SW8270	ND	D	D
m&p-Xylenes	SW8240	--	ND	D
m&p-Xylenes	SW8260	D	--	--
o-Xylene	SW8240	--	ND	D
o-Xylene	SW8260	D	--	--

D = At least one numerical result was detected in samples.
ND = No numerical results were detected in samples.
-- = Not tested.

recommendations for remedial action based on the risk assessment results.

2.3.1 Chemicals of Potential Concern

Additional screening of the chemicals was performed, in accordance with the methods described in Section 3 of Volume 1, to identify the COPCs carried through the human health assessment. The additional screening involved examining the frequency of detection, evaluating essential nutrients, and comparing maximum detected concentrations with the U.S. Environmental Protection Agency (USEPA) Region III risk-based concentrations (RBCs).

Frequency of Detection

At the Southeast Runway Fuel Spill site, there were no chemicals eliminated from the list of COPCs on the basis of a low (< 5%) frequency of detection.

Essential Nutrients

Essential nutrients that are often present either in the soil and water media were not detected at the Southeast Runway Fuel Spill site at concentrations elevated above background concentrations.

Risk-Based Screening

Maximum detected concentrations of numerous analytes were lower than one-tenth the media-specific USEPA Region III residential RBCs and were eliminated from the list of COPCs. Appendix 4B of this volume contains the risk-based screening results.

COPC Summary

Tables 2-3, 2-4, and 2-5 summarize conclusions for all chemicals that were positively detected in the surface soil, subsurface soil, and groundwater media, respectively, at the Southeast Runway Fuel Spill site. The tables indicate, for each analyte, whether sample concentrations were distinguishable from blank concentrations, whether concentrations were significantly different from background concentrations, whether the chemical was detected in at least 5% of the samples, and whether the chemical was eliminated as an essential nutrient or by the risk-based screen. Note that since 1993 and later sampling events reported uncensored data (where an ND is reported only if there is no instrument response), very low levels (greater than zero) of many analytes were reported in both blanks samples and site samples. Consequently, many chemicals that are not common field or laboratory contaminants were "detected" in blanks samples and were eliminated as COPCs on the basis of the blanks comparison. No analytes were detected in blanks at concentrations considered to represent a blanks contamination problem requiring corrective action as a result of the data validation process.

Table 2-6 lists the COPCs for the Southeast Runway Fuel Spill site. It includes all chemicals, by medium, with positive results that were greater than background and blank concentrations, that exceeded 5% detection frequency, and that were not eliminated as an essential nutrient or by risk-based screening.

Appendix A of the RI report (USAF, 1995b) provides a complete listing of analytical results from the RI. The appendix reports the sampling location, analytical result, any data qualifiers, and the sample detection limit.

Tables 2-7, 2-8, and 2-9 provide a statistical summary of the values used in the risk assessment for human health COPCs in surface soil and sediments, subsurface soil, and groundwater, respectively. The tables list the detection frequency, maximum detected concentration, mean, standard deviation, and 95% upper confidence limit (UCL) of the data.

2.3.2 Exposure Assessment

Human exposure to COPCs that are present at or migrating from the Southeast Runway Fuel Spill site was assessed in accordance with methods described in Section 3 of Volume 1.

Human Exposure Scenarios

Nine human exposure scenarios were ad-

Table 2-3
Identification Criteria for Surface Soil COPCs at the Southeast Runway Fuel Spill Site

Chemical	Blanks Comparison[a]	Background Comparison[b]	Low Frequency[c]	Essential Nutrient[d]	Risk-Based Screen[e]	COPC
2-Methylnaphthalene	-	-	-	-	-	YES [f]
Anthracene	-	-	-	-	X	-
Benzo(a)anthracene	-	-	-	-	-	YES
Benzo(a)pyrene	-	-	-	-	-	YES
Benzo(b)fluoranthene	-	-	-	-	-	YES
Benzo(g,h,i)perylene	-	-	-	-	-	YES [f]
Benzo(k)fluoranthene	-	-	-	-	X	-
Chrysene	-	-	-	-	X	-
Dibenz(a,h)anthracene	-	-	-	-	-	YES
Fluoranthene	-	-	-	-	X	-
Indeno(1,2,3-cd)pyrene	-	-	-	-	-	YES
Lead	-	-	-	-	-	YES [f]
Methylene chloride	X	-	-	-	-	-
Naphthalene	-	-	-	-	X	-
Phenanthrene	-	-	-	-	-	YES [f]
Pyrene	-	-	-	-	X	-
bis(2-Ethylhexylphthalate)	-	-	-	-	X	-

[a] Indistinguishable from blank concentrations.
[b] Not significantly elevated above background concentrations.
[c] Detected at a frequency less than 5%.
[d] Estimated maximum daily intake less than the RDA.
[e] Maximum detected concentration lower than one-tenth the USEPA Region III residential soil RBC.
[f] Toxicity value not available with which to perform risk-based screen.
\- Not eliminated through this criterion.

Table 2-4
Identification Criteria for Subsurface Soil COPCs at the Southeast Runway Fuel Spill Site

Chemical	Blanks Comparison[a]	Background Comparison[b]	Low Frequency[c]	Essential Nutrient[d]	Risk-Based Screen[e]	COPC
2-Butanone (MEK)	-	-	-	-	X	-
2-Methylnaphthalene	-	-	-	-	-	YES [f]
Acenaphthene	-	-	-	-	X	-
Acetone	-	-	-	-	X	-
Benzene	-	-	-	-	X	-
Ethylbenzene	-	-	-	-	X	-
Fluorene	-	-	-	-	X	-
Lead	-	X	-	-	-	-
Methylene chloride	X	-	-	-	-	-
Naphthalene	-	-	-	-	X	-
Phenanthrene	-	-	-	-	-	YES [f]
Toluene	-	-	-	-	X	-
bis(2-Ethylhexylphthalate)	-	-	-	-	X	-
m & p-Xylenes	-	-	-	-	X	-
o-Xylene	-	-	-	-	X	-

[a] Indistinguishable from blank concentrations.
[b] Not significantly elevated above background concentrations.
[c] Detected at a frequency less than 5%.
[d] Estimated maximum daily intake less than the RDA.
[e] Maximum detected concentration lower than one-tenth the USEPA Region III residential soil RBC.
[f] Toxicity value not available with which to perform risk-based screen.
\- Not eliminated through this criterion.

Table 2-5
Identification Criteria for Groundwater COPCs at the Southeast Runway Fuel Spill Site

Chemical	Blanks Comparison[a]	Background Comparison[b]	Low Frequency[c]	Essential Nutrient[d]	Risk-Based Screen[e]	COPC
1,2-Dichloroethane	-	-	-	-	-	YES
2-Methylnaphthalene	-	-	-	-	-	YES [f]
Acenaphthene	-	-	-	-	X	-
Acetone	X	-	-	-	-	-
Benzene	-	-	-	-	-	YES
Benzyl alcohol	-	-	-	-	X	-
Chloroethane	-	-	-	-	X	-
Chloroform	-	-	-	-	-	YES
Chloromethane	-	-	-	-	-	YES
Dibromomethane	X	-	-	-	-	-
Dibutylphthalate	-	-	-	-	X	-
Ethylbenzene	-	-	-	-	X	-
Fluorene	-	-	-	-	X	-
Methylene chloride	X	-	-	-	-	-
Naphthalene	-	-	-	-	X	-
Phenanthrene	-	-	-	-	-	YES [f]
Tetrachloroethene	X	-	-	-	-	-
Toluene	-	-	-	-	X	-
Trichloroethene	-	-	-	-	-	YES
m & p-Xylenes	-	-	-	-	X	-
o-Xylene	-	-	-	-	X	-
Aluminum	-	X	-	-	-	-
Antimony	-	X	-	-	-	-
Arsenic	-	X	-	-	-	-

Table 2-5
(Continued)

Chemical	Blanks Comparison[a]	Background Comparison[b]	Low Frequency[c]	Essential Nutrient[d]	Risk-Based Screen[e]	COPC
Barium	-	X	-	-	-	-
Beryllium	-	-	-	-	-	YES
Cadmium	X	-	-	-	-	-
Calcium	-	X	-	-	-	-
Chromium	-	X	-	-	-	-
Cobalt	-	X	-	-	-	-
Copper	-	X	-	-	-	-
Iron	-	X	-	-	-	-
Lead	-	X	-	-	-	-
Magnesium	-	X	-	-	-	
Manganese	-	X	-	-	-	-
Molybdenum	-	X	-	-	-	-
Nickel	-	X	-	-	-	-
Potassium	-	X	-	-	-	-
Selenium	-	X	-	-	-	-
Silver	-	X	-	-	-	-
Sodium	-	X	-	-	-	-
Thallium	-	X	-	-	-	-
Vanadium	-	X	-	-	-	-
Zinc	-	X	-	-	-	-

[a] Indistinguishable from blank concentrations.
[b] Not significantly elevated above background concentrations.
[c] Detected at a frequency less than 5%.
[d] Estimated maximum daily intake less than the RDA.
[e] Maximum detected concentration lower than one-tenth the USEPA Region III tap water RBC.
[f] Toxicity value not available with which to perform risk-based screen.
\- Not eliminated through this criterion.

Table 2-6
Chemicals of Potential Concern at the Southeast Runway Fuel Spill Site

Chemical	Media		
	Surface Soil	Subsurface Soil	Groundwater
Metals			
Beryllium			X
Lead	X		
PNAs			
Benz(a)anthracene	X		
Benzo(a)pyrene	X		
Benzo(b)fluoranthene	X		
Benzo(g,h,i)perylene[a]	X		
Dibenz(a,h)anthracene	X		
Indeno(1,2,3-cd)pyrene	X		
2-Methylnaphthalene [a]	X	X	X
Phenanthrene[a]	X	X	X
Volatiles			
Chloroform			X
Benzene			X
Chloromethane			X
1,2-Dichloroethane			X
Trichloroethene			X

[a] Retained as a COPC for qualitative evaluation only. Toxicity values are not available to perform risk quantification at this time.

Table 2-7
Statistical Summary of Values Used in the Human Health Risk Assessment for Surface Soil at the Southeast Runway Fuel Spill Site

Chemical Name	Detection Frequency	Max Detect (mg/kg)	Mean (mg/kg)	Standard Deviation	95% UCL (mg/kg)
Metals					
Lead [a]	4/4	5.13E+01	2.73E+01	2.00E+01	**5.08E+01**
PNAs					
Benzo(a)anthracene	1/4	3.54E-01	1.25E-01	1.60E-01	**3.13E-01**
Benzo(a)pyrene	1/4	5.54E-01	1.94E-01	2.57E-01	**4.96E-01**
Benz(b)fluoranthene	1/4	4.47E-01	1.63E-01	2.05E-01	**4.04E-01**
Benzo(g,h,i)perylene [b]	1/4	2.12E-01	7.04E-02	9.60E-02	**1.83E-01**
Dibenz(a,h)anthracene	1/4	9.47E-02	5.58E-02	3.17E-02	**9.30E-02**
Indeno(1,2,3-cd)pyrene	1/4	2.40E-01	1.08E-01	1.12E-01	**2.40E-01**
2-Methylnaphthalene [b]	1/4	3.36E-02	1.88E-02	1.05E-02	**3.12E-02**
Phenanthrene [b]	1/4	**1.49E-01**	7.90E-02	7.04E-02	1.62E-01

Bold numbers indicate the value used for the risk assessment, which was the lower of either the UCL or the maximum detected concentration.

[a] USEPA Integrated Exposure Uptake Biokinetic (IEUBK) model was used to calculate risk from lead.
[b] No toxicity data available.

Table 2-8
Statistical Summary of Values Used in the Human Health Risk Assessment for Subsurface Soil at the Southeast Runway Fuel Spill Site

Chemical Name	Detection Frequency	Max Detect (mg/kg)	Mean (mg/kg)	Standard Deviation	95% UCL (mg/kg)
PNAs					
2-Methylnaphthalene [a]	3/6	**2.35E+02**	3.07E+01	9.50E+01	7.99E+16
Phenanthrene [a]	1/6	**2.32E-01**	1.09E-01	9.38E-01	6.17E+03

Bold numbers indicate the value used for the risk assessment, which was the lower of either the UCL or the maximum detected concentration.
[a] No toxicity data available.

Table 2-9
Statistical Summary of Values Used in the Human Health Risk Assessment for Groundwater at the Southeast Runway Fuel Spill Site

Chemical Name	Detection Frequency	Max Detect (mg/L)	Mean (mg/L)	Standard Deviation	95% UCL (mg/L)
Metals					
Beryllium	4/4	**3.94E-03**	1.73E-03	1.92E-03	3.99E-03
PNAs					
2-Methylnaphthalene [a]	1/4	**9.89E-02**	2.52E-02	4.91E-02	1.07E+12
Phenanthrene [a]	1/4	**7.39E-04**	4.62E-04	2.69E-04	7.79E-04
Volatiles					
Benzene	2/4	**5.81E-02**	1.45E-02	2.90E-02	1.97E+31
Chloroform	1/4	3.88E-05	2.13E-05	1.31E-05	**3.67E-05**
Chloromethane	1/4	1.19E-03	3.65E-04	5.55E-04	**1.02E-03**
1,2-Dichloroethane	2/4	4.55E-03	1.42E-03	2.14E-04	**3.94E-03**
Trichloroethene	3/4	**2.06E-04**	6.58E-05	9.45E-05	2.10E+04

Bold numbers indicate the lower value used for the risk assessment, which was the lower of either the UCL or the maximum detected concentration.
[a] No toxicity data available.

dressed in the assessment of risks posed by the site:

Current Scenarios (also applicable as future scenarios)

1. Short-Term On-Base Resident (subchronic adult only);

2. Long-Term On-Base Resident (chronic adult and child);

3. Old Town Galena Resident (chronic adult and child);

4. New Town Galena Resident (chronic adult and child);

5. Short-Term On-Base Worker (subchronic adult only);

6. Long-Term On-Base Worker (chronic adult only);

7. Construction Worker (subchronic adult only);

Future Scenarios

8. Boarding School Student (subchronic/chronic); and

9. Old Town Galena Resident (chronic adult and child).

These scenarios are described in Section 3 of Volume 1. Since possible exposures of the Old Town Galena resident might differ in the future if contaminants in the shallow groundwater migrate to the Old Town area, the future Old Town Galena resident is considered separately from the current Old Town Galena resident. The on-base worker scenarios assume that workers at the Southeast Runway Fuel Spill site are engaged in activities outdoors, every work day, for the duration of employment. However, there are no regular employees in the area of the site. Therefore, the worker scenarios better represent reasonable worst-case exposures that might occur at any time in the future, assuming industrial use of the land involving primarily outdoor work. Owing to the site's location adjacent to the runway, this area will not be frequented by workers or others as long as the airport is actively operating.

Exposure Pathways

Exposure pathways considered for applicability to each Southeast Runway Fuel Spill site exposure scenario included the following:

Soil Pathways

- Incidental ingestion of soil; and
- Dermal contact with soil.

Air Pathways

- Inhalation of fugitive dust; and
- Inhalation of vapors that volatilize from surface and subsurface media.

Groundwater Pathways

- Ingestion of drinking water;
- Dermal contact with water while showering;
- Inhalation of vapors that volatilize from water while showering; and
- Ingestion of plants irrigated or subirrigated with groundwater.

Surface Water Pathways

- Ingestion of fish from the Yukon River.

Groundwater pathways are applicable only if the results of groundwater modeling indicate that contaminants from the Southeast

Runway Fuel Spill site might migrate to Old Town Galena. Surface water pathways are applicable only if the results of groundwater modeling indicate that toxicologically significant concentrations of contaminants originating from the site might reach the Yukon River.

Contaminants detected in the groundwater at the Southeast Runway Fuel Spill site were modeled to Old Town Galena and to the shoreline of the Yukon River. Assuming a generally southwestern flow direction (as determined in the RI), parts of Old Town Galena are directly downgradient of the site.

Concentrations of contaminants in the Yukon River within 5 ft of the shoreline were also estimated, assuming that mixing is limited to river flow within that 5 ft. This assumption was made because there is not instant dilution of contaminants entering the river in the groundwater by the entire volume of river flow that passes by Galena. Rather, a plume would follow the shoreline downstream.

Table 2-10 summarizes the modeled Old Town Galena and river concentrations for the COPCs in groundwater at the Southeast Runway Fuel Spill site. It also lists applicable chemical-specific fish bioconcentration factors (BCFs) and estimated concentrations in fish exposed to river water within 5 ft of the shoreline. Finally, the table lists the USEPA Region III RBCs for tap water and fish. The estimated fish concentrations are all below the Region III RBCs for fish. The surface water pathways are therefore not quantified for this site. However, modeled concentrations at Old Town Galena of 1,2-dichloroethane, benzene, and beryllium exceed one-tenth the Region III tap water RBCs; as such, the groundwater pathways are quantified for the Old Town Galena resident for this site. Since there is no evidence that a groundwater contaminant plume extends from the site to Old town Galena, the groundwater-related exposure pathways are considered possible future exposures and are quantified for the future Old Town Galena resident scenario only.

Also, vegetables grown in gardens located close to the west end of the Southeast Runway Fuel Spill site could possibly be currently taking contaminants directly from the shallow groundwater. Although the water depth fluctuates significantly over the course of a year (from very close to the surface during spring breakup to 15 to 20 ft below the surface at low water), it is unlikely that the roots of the garden plants are in direct contact with the groundwater for a substantial portion of the growing season. Nevertheless, because of the fluctuation in groundwater depth, it is possible that groundwater contamination has affected the soils in which the crops are grown. Therefore, ingestion of plants subirrigated with the shallow groundwater at the location of the gardens located near the site is quantified for the current Old Town Galena resident scenario for this site.

Appendix C (Volume 3) describes the groundwater modeling methodology. Likewise, Appendix D (Volume 3) describes the emissions estimating and air dispersion modeling methodology. These methodologies are not repeated in this addendum. Groundwater modeling results for this site are documented in Appendix 4C of this volume. Appendix 4D of this volume contains dispersion modeling results for this site. Appendices 4E and 4F of this volume describe the methodologies used to model uptake by fruits and vegetables and air concentrations inside a shower stall, respectively, and provide modeling results.

Conceptual Site Model

A conceptual site model presents the current understanding of possible sources of contamination and the likely mechanisms for movement of contamination within and beyond site boundaries. Figure 2-2 is a conceptual site model flow diagram showing the primary sources of contamination at the Southeast Runway Fuel Spill site, their migration pathways, exposure media, and exposure routes that may lead to human exposure. The figure effectively summarizes the results of the human health exposure assessment. It illustrates complete exposure

Table 2-10
Comparisons of Southeast Runway Groundwater Modeling Results to USEPA Region III Risk-Based Concentrations (RBCs)

Chemical	Modeled Old Town Galena Concentration (ug/L)	Modeled River Concentration [a] (ug/L)	Fish BCF [b]	Estimated Concentration in Fish [c]	USEPA Region III RBC [d]	
					Tap water (ug/L)	Fish (mg/kg)
1,2-Dichloroethane	4.55E-01 [e]	2.54E-05	2	5.1E-08	1.2E-01	3.5E-02
2-Methylnaphthalene	3.07E+01	2.45E-03	1000	2.5E-03	NV	NV
Benzene	7.17E-02 [e]	4.38E-06	4.27	1.9E-08	3.6E-01	1.1E-01
Beryllium	1.13E+00 [e]	9.02E-05	19	1.7E-06	1.6E-02	7.3E-04
Chloroform	9.02E-03	6.39E-07	8	5.1E-09	1.5E-01	5.2E-01
Chloromethane	3.95E-04	2.99E-09	2.88	8.6E-12	1.4E+00	2.4E-01
Phenanthrene	8.24E-02	3.85E-06	325	1.3E-06	NV	NV
Trichloroethene	4.70E-02	3.30E-06	17	5.6E-08	1.6E+00	2.9E-01

a Estimated concentration in Yukon River within 5 ft of shoreline, assuming mixing is limited to river flow within that 5 ft.
b Fish bioconcentration factor. See Appendix J (Ecological Assessment Toxicity Profiles) of Volume 3, and Appendix 4L of this addendum.
c Concentration in water (ug/L) x 1 L/kg x 1 mg/1000 ug x BCF (unitless).
d U.S. Environmental Protection Agency (USEPA) Region III, Risk-Based Concentration Table, January-June 1995, March 7, 1995.
e Modeled concentration exceeds one-tenth the Region III tap water RBC. This chemical is included in the groundwater pathway calculations.

NV = No value

NOTE: Shaded values exceed Region III RBC for tap water or fish.

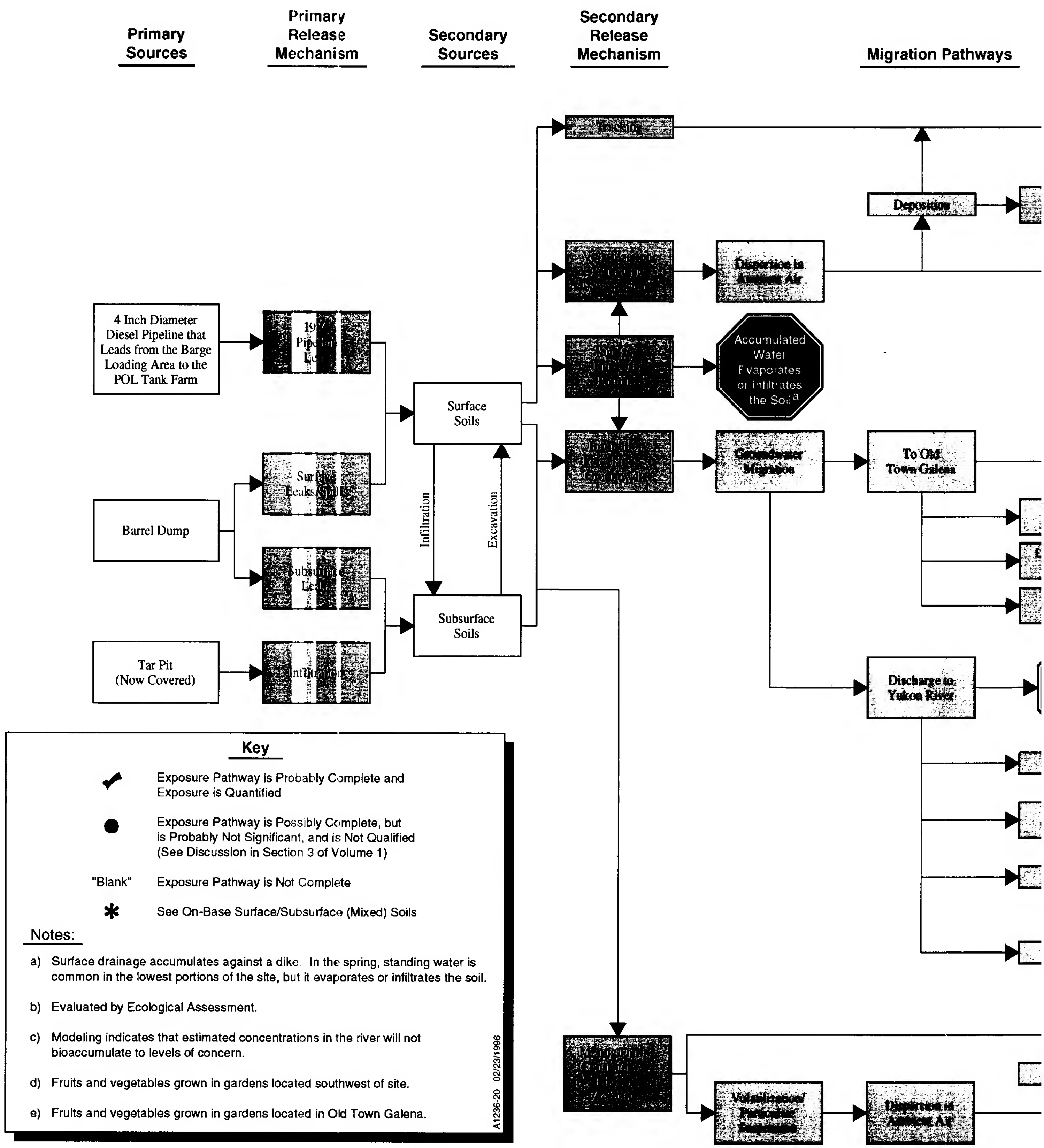


Figure 2-2. Human Exposure Conceptual Model

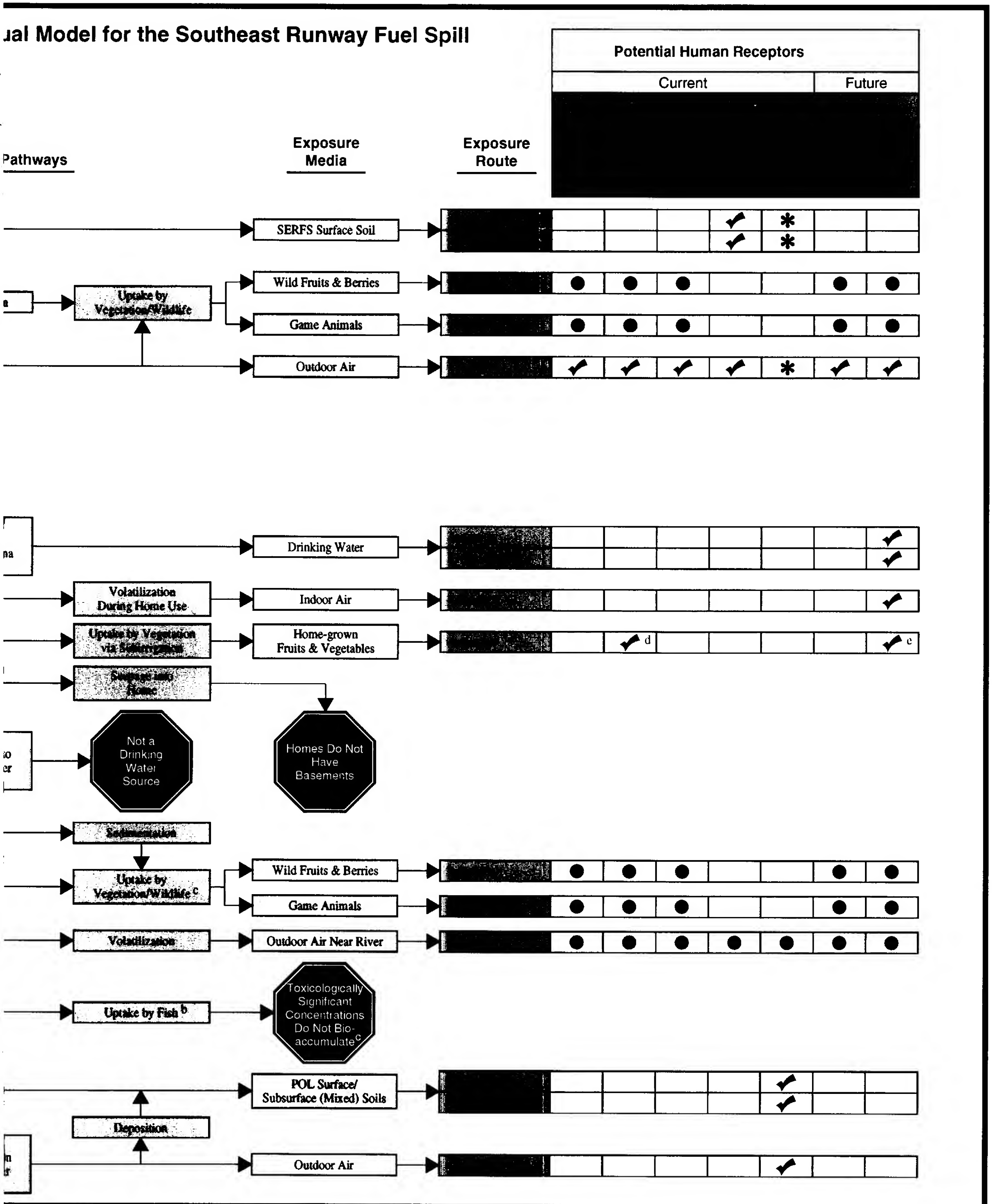


Figure 2-2. Human Exposure Conceptual Model for the Southeast Runway Fuel Spill

pathways for the exposure scenarios that are evaluated and indicates which pathways are quantified for each scenario. It also notes which pathways are possibly complete but probably not significant. These pathways are not quantified.

Quantification of Exposure

Table 2-11 provides a matrix of exposure scenarios and soil-related exposure pathways that are applicable to the Southeast Runway Fuel Spill site and specifies the exposure points and data that were used to derive concentrations in the exposure media at this site. Table 2-12 provides the same information for groundwater-related pathways. Appendix 4G of this volume summarizes the human health exposure point concentrations used to quantify exposure.

Section 3 of Volume 1 describes the methods used to quantify exposure. Human health intake equations and exposure parameters are documented in Appendix 4H of this volume. Intakes were quantified separately for evaluation of carcinogenic and noncarcinogenic effects. Daily intakes for analysis of carcinogenic effects are averaged over a 70-year lifetime. Daily intakes for analysis of noncarcinogenic effects are averaged over the exposure duration only.

2.3.3 Toxicity Assessment

Table 2-13 presents the toxicity values used in the human health risk assessment for COPCs at the Southeast Runway Fuel Spill site. Most of the toxicity values in this table were obtained from USEPA's Integrated Risk Information System (IRIS) in October 1995 or from USEPA's Health Effects Assessment Summary Tables (HEAST) (USEPA, 1994b). Carcinogenic values for some PNAs were calculated using methodologies in provisional guidance for calculating potential potency based on values for benzo(a)pyrene (USEPA, 1993). Although the oral slope factor for benzo(a)pyrene is listed in IRIS, the inhalation slope factor has been withdrawn from IRIS and HEAST. Since there is no inhalation unit risk for benzo(a)pyrene, the USEPA guidance directs that the potential potency values should be applied only to assessment of carcinogenic hazard from oral exposure to PNAs (USEPA, 1993).

The inhalation RfDs for benzene and 1,2-dichloroethane and the inhalation RfD and slope factor for trichloroethene are provisional values recommended by the Superfund Health Risk Technical Support Center (footnoted EPA-ECAO in the USEPA Region III RBC table, USEPA, 1995b). The provisional RfDs and slope factors were converted to RfCs and inhalation unit risk values for use in the risk calculations. The oral slope factor for trichloroethene has been withdrawn from IRIS and HEAST, but is used to evaluate oral exposures to this chemical because no other value is available.

Toxicity values were not available for four COPCs at the Southeast Runway Fuel Spill site. These include lead, benzo(g,h,i)perylene, 2-methylnaphthalene, and phenanthrene. Lead was initially screened using the USEPA-recommended screening level (400 mg/kg) for lead in soil for residential land use (USEPA, 1994d) and the drinking water action level for lead (USEPA, 1994a), and if necessary, evaluated using the USEPA Integrated Exposure Uptake Biokinetic (IEUBK) model for lead in children (USEPA, 1994b). Available health effects information for these COPCs is included in Appendix G (Volume 3), and the impact of the lack of toxicity values for these COPCs is discussed as an uncertainty in Section 2.3.5.

Dermal toxicity values are not listed in Table 2-13. Because of the high level of uncertainty associated with adjusting oral toxicity values (which are generally based on administered dose) to evaluate dermal exposure (which is calculated as an absorbed dose), unadjusted oral values were used to quantify dermal pathway risks. Dermal absorption factors used to quantify dermal contact with soil are listed in Table 2-13. Default values of 1% for inorganic analytes and 10% for organic analytes were used. PNAs were not evaluated for dermal exposure (see discussion in Section 3.1.4 of Volume 1).

Table 2-11
Data Used to Derive Exposure Concentrations in Soil-Related Exposure Media at the Southeast Runway Fuel Spill Site

Exposure Scenario	Exposure Pathways		
	Ingestion of Soil	Dermal Contact with Soil	Inhalation of Vapor Phase Chemicals and Fugitive Dust in Ambient Air
Current Scenarios			
On-Base Residents -Short Term -Long Term	NA	NA	Modeled concentration of vapor-phase chemicals (D) and wind-blown dust (E) at closest down-wind on-base residential receptor.
Galena Residents	NA	NA	
-Old Town			Modeled concentration of vapor-phase chemicals (D) and wind-blown dust (E) at closest down-wind Old Town Galena residential receptor.
-New Town			Modeled concentration of vapor-phase chemicals (D) and wind-blown dust (E) at closest down-wind New Town Galena residential receptor.
On-Base Workers			
-Short Term	Surface Soil (A)	Surface Soil (A)	Modeled concentration of vapor-phase chemicals (D) and wind-blown dust (E) directly above the site.
-Long Term	Surface Soil (A)	Surface Soil (A)	Modeled concentration of vapor-phase chemicals (D) and wind-blown dust (E) directly above the site.
-Construction	Mixed Soil (C)	Mixed Soil(C)	Modeled concentration of vapor-phase chemicals (F) and dust generated by construction activity (G) directly above the site.
Future Scenarios			
Boarding School Student	NA	NA	Modeled concentration of vapor-phase chemicals (D) and wind-blown dust (E) at the location of the proposed student dormitory.
Galena Residents			
-Old Town	NA	NA	Modeled concentration of vapor-phase chemicals (D) and wind-blown dust (E) at closest down-wind Old Town Galena residential receptor.

Table 2-11
(Continued)

Exposure Media

Remedial Investigation Data:
(A) Measured concentrations in surface soils, represented by the 95% UCL, or the maximum detected concentration if lower, in soils within 2 ft of the ground surface at the Southeast Runway Fuel Spill site.
(B) Measured concentrations in subsurface soils, represented by the 95% UCL, or the maximum detected concentration if lower, in soils greater than 2 ft below the ground surface at the Southeast Runway Fuel Spill site.
(C) Mixed surface and subsurface soil, represented by the highest of either the surface soil concentration (A) or the subsurface soil concentration (B).

Transport and Fate Modeling:
(D) Estimated concentration of vapor-phase chemicals in ambient air based on emissions from surface soil (A), subsurface soil (B), and dispersion modeling to specific receptor locations.
(E) Estimated concentration of wind-blown dust based on particulate emissions from surface soil (A) and dispersion modeling to specific receptor locations.
(F) Estimated concentration of vapor-phase chemicals in ambient air assuming subsurface soil is brought to the surface by construction activities, based on emissions from mixed soils (C) and dispersion modeling to specific receptor locations.
(G) Estimated concentration of dust generated by construction activities directly above the site, based on particulate emissions from mixed soil (C) and dispersion modeling to specific receptor locations.

NA = Not Applicable

Table 2-12
Data Used to Derive Exposure Concentrations in Soil-Related Exposure Media at the Southeast Runway Fuel Spill Site

Exposure Scenario	Exposure Pathways			
	Ingestion of Groundwater	Dermal Contact with Groundwater	Inhalation of Vapor Phase Chemicals in Shower Stall	Ingestion of Fruits and Vegetables Irrigated or Subirrigated with Groundwater
Current Scenarios				
On-Base Residents -Short Term -Long Term	NA	NA	NA	NA
Galena Residents -Old Town	NA	NA	NA	Modeled concentrations in fruits and vegetables (F) grown in gardens located southwest of site.
-New Town	NA	NA	NA	NA
On-Base Workers -Short Term -Long Term -Construction	NA	NA	NA	NA
Future Scenarios				
Boarding School Student	NA	NA	NA	NA
Galena Residents -Old Town	Modeled concentrations in groundwater (C) at closest downgradient receptor in Old Town Galena	Modeled concentrations in groundwater (C) at closest downgradient receptor in Old Town Galena	Modeled concentrations of vapor-phase chemicals (D) in the air of a shower stall.	Modeled concentrations in fruits and vegetables (E) grown in gardens located in Old Town Galena.

<u>Exposure Media</u>

Remedial Investigation Data:
(A) Measured concentrations in shallow groundwater at the site, represented by the 95% UCL, or the maximum detected concentration, if lower, in groundwater at the four wells located at the Southeast Runway Fuel Spill site.
(B) Measured concentrations in shallow groundwater close to the gardens southwest of the site, represented by the highest concentration detected at either MW-03 or MW-04, the two monitoring wells closest to the gardens.

Table 2-12
(Continued)

Exposure Media (Continued)

Transport and Fate Modeling:

(C) Estimated concentrations in shallow groundwater at Old Town Galena based on measured concentrations in the groundwater at the site (A) and modeling to the closest downgradient location in Old Town Galena.
(D) Estimated concentrations in vapor-phase chemicals in the air of a shower stall, assuming use of shallow groundwater (C) as tap water.
(E) Estimated concentrations in fruits and vegetables grown in home gardens in Old Town Galena, assuming that groundwater (C) provides the sole source of water for the plants, either through irrigation or subirrigation.
(F) Estimated concentrations in fruits and vegetables grown in gardens southwest of the site, assuming that groundwater (B) provides the sole source of water for the plants, either through irrigation or subirrigation.

Table 2-13
Toxicity Values for Southeast Runway COPCs

COPCs	EPA Class	Chronic						Subchronic		Dermal Absorption Factor (unitless) ABS [a]
		Oral RfD (mg/kg/day)	Inhal RfD (mg/kg/day)	Inhal RfC (mg/m^3)	Oral SF 1/(mg/kg/day)	Inhal SF 1/(mg/kg/day)	Inhal Unit Risk $1/(\mu g/m^3)$	Oral RfD (mg/kg/day)	Inhal RfC ($\mu g/m^3$)	
Metals										
Beryllium	B2 [b]	5E-03 [b]	--	--	4.3E+00 [b]	8.4E+00 [d]	2.4E-03 [b]	5E-03 [d]	--	--
Lead [c]	--	--	--	--	--	--	--	--	--	--
PNAs										
2-Methylnaphthalene	--	--	--	--	--	--	--	--	--	--
Benz(a)anthracene	B2 [b]	--	--	--	7.3E-01 [e]	--	--	--	--	--
Benzo(a)pyrene	B2 [b]	--	--	--	7.3E+00 [b]	--	--	--	--	--
Benzo(b)fluoranthene	B2 [b]	--	--	--	7.3E-01 [e]	--	--	--	--	--
Benzo(g,h,i)perylene	D [b]	--	--	--	--	--	--	--	--	--
Dibenz(a,h)anthracene	B2 [b]	--	--	--	7.3E+00 [e]	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	B2 [b]	--	--	--	7.3E-01 [e]	--	--	--	--	--
Phenanthrene	D [b]	--	--	--	--	--	--	--	--	--
Volatiles										
1,2-Dichloroethane	B2 [b]	--	2.86E-03 [f]	1E-02 [g]	9.1E-02 [b]	9.1E-02 [d]	2.6E-05 [b]	--	--	1E-01
Benzene	A [b]	--	1.71E-03 [f]	6E-03 [g]	2.9E-02 [b]	2.9E-02 [d]	8.3E-06 [b]	--	--	1E-01
Chloroform	B2 [b]	1E-02 [d]	--	--	6.1E-03 [b]	8.1E-02 [d]	2.3E-05 [b]	1.0E-02 [d]	--	1E-01
Chloromethane	C [d]	--	--	--	1.3E-02 [d]	6.3E-03 [d]	1.8E-06 [g]	--	--	1E-01
Trichloroethene	--	6E-03 [f]	--	--	1.1E-02 [h]	6E-03 [f]	1.7E-06 [g]	--	--	1E-01

[a] Absorption factor of 1% was used for inorganic analytes and an absorption factor of 10% was used for organic analytes. PNAs are not evaluated for dermal exposures (see discussion in Section 3.1.4 of Volume 1).
[b] U.S. Environmental Protection Agency (USEPA), 1995. Integrated Risk Information System (IRIS). Database search, October 20, 1995.
[c] Risk from exposure to lead was evaluated using the USEPA IEUBK Model.
[d] U.S. Environmental Protection Agency (USEPA), 1994c. Health Effects Assessment Summary Tables (HEAST) Annual Update, FY 1994. EPA 540-R-020, March 1994.
[e] PNA toxicity values were derived using the *Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons* (EPA/600/R-93/089) dated July 1993.
[f] Value was taken from Region III RBC table dated 1/31/95. The table states that this is a provisional value from EPA-ECAO Regional Support.
[g] Value was calculated using the appropriate inhalation reference dose or inhalation slope factor with 20 m^3 breathing rate and 70 kg adult body weight.
[h] These values were withdrawn from both IRIS and HEAST. However, Region III recommends using these values in deriving RBCs and they are presented in the Region III RBC table dated 1/31/95.

Appendix G (Volume 3) contains toxicological profiles for all of the human health COPCs at the Southeast Runway Fuel Spill site.

2.3.4 Risk Characterization

Carcinogenic risk and noncancer hazard indices (HIs) were estimated for each exposure scenario according to procedures outlined in Section 3 of Volume 1. The carcinogenic risk

and noncarcinogenic risk estimates are presented in Appendix 4J of this volume.

Carcinogenic Effects

For each potentially carcinogenic COPC, the incremental probability that an individual will develop cancer over a lifetime was estimated from projected intake levels and the cancer slope factor or the inhalation unit risk. The USEPA Superfund site remediation goal set forth in the National Contingency Plan (NCP) designates a cancer risk of 10^{-4} (1 in 10,000) to 10^{-6} (1 in one million). This range is designed to be protective of human health and to provide flexibility for consideration of other factors in risk management decisions. A cancer risk of 1 in one million is considered the *de minimis*, or a level of negligible risk, for risk management decisions. A cancer risk higher than 1 in one million is not necessarily considered unacceptable. The State of Alaska plans to use a cancer risk level of 10^{-5} (1 in 100,000) in making risk management decisions (USAF, 1996b).

Table 2-14 summarizes the cancer risk estimates for each exposure scenario at the Southeast Runway Fuel Spill site. Estimated incremental cancer risks for all scenarios, except for the current and future Old Town Galena resident, are below 1 in one million. Estimated risks lower than 1 in one million are considered "negligible" and do not warrant remedial action. Estimated cancer risks are 0 for the residents (except Old Town Galena residents) and the boarding school students because inhalation unit risk values are not available for any of the COPCs in soil and inhalation risk could not be calculated. The only applicable exposure pathway for these scenarios is inhalation of vapors and dust from the soils at the site.

The average and reasonable maximum cancer risk estimates for the current adult Old Town Galena resident are 3 in one million and 3 in 100,000, respectively, and for the current child Old Town Galena resident are 4 in one million and 1 in 100,000, respectively. These risk estimates are within the Superfund risk range goal for carcinogens of 1 in 10,000 to 1 in one million. Ingestion of fruits and vegetables that take up beryllium from the shallow groundwater (either through irrigation or subirrigation) at the location of the gardens southwest of the site contributes the majority of the risks (97%) in all cases. Risks associated with exposure to all other chemicals are negligible.

The estimated risks for the future Old Town Galena resident range from an average of 3 in 100,000 to a reasonable maximum of 2 in 10,000 for an adult and from 2 in 100,000 to 3 in 100,000 for a child. The reasonable maximum estimate for the adult exceeds the high end of the Superfund risk range goal. The majority of the estimated risk (99%) in all cases is attributable to beryllium in groundwater. Ingestion of groundwater containing beryllium contributes most (85-95%) of the estimated risk; ingestion of fruits and vegetables that take up beryllium from the shallow groundwater (either through irrigation or subirrigation) at gardens in Old Town Galena contributes risks that exceed 1 in one million in some cases. Risks associated with exposure to all other chemicals are negligible.

Risk summary tables for each exposure scenario are provided in Appendix 4J of this volume. The tables detail the cancer risk estimates for each applicable chemical and exposure pathway and show the percent contribution of each chemical and pathway to the total estimated risk.

Noncarcinogenic Effects

To characterize the potential noncancer

Table 2-14
Summary of Carcinogenic Risks[a] by Exposure Scenario for the Southeast Runway Fuel Spill Site

Scenario	Child		Adult	
	Average	Reasonable Maximum	Average	Reasonable Maximum
Current Scenarios				
Short-Term On-Base Resident	NA	NA	0 [c]	0 [c]
Long-Term On-Base Resident	0 [c]	0 [c]	0 [c]	0 [c]
Old Town Galena Resident	**4E-06**	**1E-05**	**3E-06**	**3E-05**
New Town Galena Resident	0 [c]	0 [c]	0 [c]	0 [c]
Short-Term On-Base Worker	NA	NA	4E-08	1E-07
Long-Term On-Base Worker	NA	NA	5E-07	5E-07
On-Base Construction Worker	NA	NA	9E-09	2E-07
Future Scenarios				
Boarding School Student[b]	0 [c]	0 [c]	NA	NA
Old Town Galena Resident	**2E-05**	**3E-05**	**3E-05**	**2E-04**

NOTE: risk estimates printed in bold type equal or exceed the Superfund site remediation threshold of 10^{-6} (1 in one million) for carcinogens.

[a]Carcinogenic risk is expressed as a unitless probability of an individual developing cancer.
[b]Age 15-18 (Grades 9-12) for the average case and age 6-19 (Grades 1-12, plus two repeat years) for the reasonable maximum case.
[c]Cancer risks are 0 because inhalation unit risk values are not available for any of the COPCs in soil. The only applicable pathway of exposure is inhalation of vapors and dust from the soils at the site.
NA = Not Applicable

effects of chemicals, comparisons were made between projected intakes of COPCs over a specified time and toxicity values, primarily oral RfDs and inhalation RfCs. A hazard quotient (HQ), which is the ratio between exposure to a chemical and that chemical's toxicity value, was calculated for each noncarcinogenic COPC and exposure pathway. Chemical-specific HQs were then summed for each COPC and each pathway of exposure to calculate the total HI.

The HI is not a statistical probability of a systemic effect occurring. If the exposure level exceeds the appropriate toxicity value (i.e., the HQ is greater than one), there may be cause for concern. The Superfund site remediation goal for noncarcinogens is a total HI of 1 for chemicals with similar toxic endpoints.

Table 2-15 summarizes the noncancer hazard estimates for each exposure scenario. Noncancer HIs are 0 for all scenarios (except Old Town Galena residents) because none of the COPCs in soil have inhalation RfCs and oral RfDs. The only applicable pathways of exposure for these scenarios are soil-related pathways. The HIs for all scenarios are well below the Superfund site remediation goal of 1 for noncarcinogens, indicating that there is little cause for concern about noncarcinogenic effects.

Noncancer risk summary tables for each exposure scenario are provided in Appendix 4J of this volume. The tables detail the noncancer hazard estimates for each applicable chemical and exposure pathway and show the percent contribution of each chemical and pathway to the total estimated HI.

Effects of Exposure to Lead

The maximum detected concentration of lead at the site is 51 mg/kg in the surface soil. Lead is not a COPC in subsurface soil or groundwater at the site. The maximum soil concentrations are well below the 400 mg/kg recommended screening level for lead in residential soil (USEPA, 1994d), which was derived using the IEUBK lead model (USEPA, 1994b). Since the soil concentrations are well below the soil screening level, lead was not evaluated further.

Major Factors Driving Estimated Risks

Tables 2-16 and 2-17 present a risk characterization summary for carcinogenic risk estimates and noncarcinogenic hazard estimates, respectively. For each scenario the tables specify the exposure pathways that were quantified, the estimated risks for each case, the chemicals and pathways that are major contributors to the estimated risks, and the primary uncertainties associated with the estimates.

The only chemical and pathway that contribute a chemical- and pathway-specific risk greater than 1 in one million is beryllium in groundwater, via ingestion of groundwater and ingestion of fruits and vegetables that take up beryllium from the groundwater. Beryllium is a COPC in groundwater at the site because the background comparison concluded that average beryllium concentrations at the site exceeded average beryllium concentration in background groundwater. However, the level of confidence in this conclusion is rated as weak, based on the p-value of the comparison (0.0630). Moreover, the maximum detected concentration in groundwater at the site (0.00394 mg/L) is lower than the calculated background upper tolerance limit (UTL) for beryllium in groundwater (0.005 mg/L) (USAF, 1995b). It is also lower than the USEPA maximum contaminant level (MCL) and the Maximum Contaminant Level Goal (MCLG) for drinking water, which are both 0.004 mg/L. There is no reason to suspect that concentrations of beryllium in groundwater at this site might be elevated above background; although beryllium and beryllium alloys are sometimes used for various types of instrument springs, control parts, valves, and airplane carburetors and instruments, it is unlikely that these possible uses have resulted in elevated beryllium concentrations at this site.

Table 2-15
Summary of Noncarcinogenic Hazard Indices[a] by Exposure Scenario for the Southeast Runway Fuel Spill Site

Scenario	Child		Adult	
	Average	Reasonable Maximum	Average	Reasonable Maximum
Current Scenarios				
Short-Term On-Base Resident	NA	NA	0 [c]	0 [c]
Long-Term On-Base Resident	0 [c]	0 [c]	0 [c]	0 [c]
Old Town Galena Resident	0.002	0.006	< 0.001	0.001
New Town Galena Resident	0 [c]	0 [c]	0 [c]	0 [c]
Short-Term On-Base Worker	NA	NA	0 [c]	0 [c]
Long-Term On-Base Worker	NA	NA	0 [c]	0 [c]
On-Base Construction Worker	NA	NA	0 [c]	0 [c]
Future Scenarios				
Boarding School Student[b]	0 [c]	0 [c]	NA	NA
Old Town Galena Resident	0.01	0.02	0.003	0.007

NOTE: Hazard indices printed in bold type equal or exceed the Superfund site remediation goal of 1 for non-carcinogens.

[a]Noncarcinogenic hazard is not expressed as a probability of an adverse effect but rather a comparison between exposure and a reference dose (hazard index).
[b]Age 15-18 (Grades 9-12) for the average case and age 6-19 (Grades 1-12, plus two repeat years) for the reasonable maximum case.
[c]Noncancer hazard indices are 0 because none of the COPCs in soil are known to have adverse effects by the inhalation or oral routes. The only applicable pathways of exposure are soil-related pathways.
NA = Not Applicable

Table 2-16
Risk Characterization Summary for the Southeast Runway Fuel Spill Site: Carcinogenic Risks

Scenario	Pathways Quantified	Case	Estimated Total Cancer Risk [a]		Chemicals and Pathways that Contribute a Chemical- and Pathway-Specific Cancer Risk Greater than 1 in One Million [b]	Primary Site-Specific Uncertainties
			Average	Reasonable Maximum		
Current Scenarios						
Short-Term On-Base Resident (subchronic)	1. Inhalation of vapors and dust	Adult	0	0	None	Applicability of cancer risk estimation methodology to subchronic exposure durations.
Long-Term On-Base Resident (chronic)	1. Inhalation of vapors and dust	Child Adult	0 0	0 0	None	Duration of residence.
Old Town Galena Resident (chronic)	1. Inhalation of vapors and dust 2. Ingestion of fruits and vegetables (grown in gardens southwest of site) irrigated or subirrigated with groundwater	Child Adult	**4E-06** **3E-06**	**1E-05** **3E-05**	Ingestion of fruits and vegetables that take up beryllium from the shallow groundwater.	Presence of beryllium in groundwater above background levels. Assumption that 100% of water required by fruits and vegetables grown in gardens southwest of site is supplied by shallow groundwater, either through irrigation or subirrigation. Calculation of uptake by fruits and vegetables of contaminants in groundwater. Risk from accessing the site was not quantified.
New Town Galena Resident (chronic)	1. Inhalation of vapors and dust	Child Adult	0 0	0 0	None	Risk from accessing the site was not quantified.
Short-Term On-Base Worker (subchronic)	1. Inhalation of vapors and dust 2. Incidental ingestion of soil 3. Dermal contact with soil	Adult	4E-08	1E-07	None	Likelihood of workers at the site. Nature and duration of work activities at the site. Applicability of cancer risk estimation methodology to subchronic exposure durations. Lack of dermal toxicity values for PNAs.
Long-Term On-Base Worker (chronic)	1. Inhalation of vapors and dust 2. Incidental ingestion of soil 3. Dermal contact with soil	Adult	5E-07	5E-07	None	Likelihood of workers at the site. Nature and duration of work activities at the site. Lack of dermal toxicity values for PNAs.

Table 2-16
(Continued)

Scenario	Pathways Quantified	Case	Estimated Total Cancer Risk [a]		Chemicals and Pathways that Contribute a Chemical- and Pathway-Specific Cancer Risk Greater than 1 in One Million [b]	Primary Site-Specific Uncertainties
			Average	Reasonable Maximum		
On-Base Construction Worker (subchronic)	1. Inhalation of vapors and dust 2. Incidental ingestion of soil 3. Dermal contact with soil	Adult	9E-09	2E-07	None	Likelihood of construction activity at the site. Duration of construction activity. Applicability of cancer risk estimation methodology to subchronic exposure durations. Lack of dermal toxicity values for PNAs.
Future Scenarios						
Boarding School Student (subchronic/ chronic)	1. Inhalation of vapors and dust	Student	0	0	None	Extension of facility from Grades 9-12 to Grades 1-12. Risk from accessing the site was not quantified.
Old Town Galena Resident (chronic)	1. Inhalation of vapors and dust 2. Ingestion of groundwater 3. Dermal contact with groundwater 4. Inhalation of vapors while showering 5. Ingestion of fruits and vegetables irrigated or subirrigated with groundwater	Child Adult	**2E-05** **3E-05**	**3E-05** **2E-04**	1. Ingestion of groundwater containing beryllium 2. Ingestion of fruits and vegetables that take up beryllium from the shallow groundwater	Presence of beryllium in groundwater above background levels. Use of shallow groundwater as drinking water. Estimated concentrations in groundwater at Old Town Galena are the result of conservative groundwater modeling. Assumption that 100% of water required by fruits and vegetables grown in gardens in Old Town Galena is supplied by shallow groundwater, either through irrigation or subirrigation. Calculation of uptake by fruits and vegetables of contaminants in groundwater. Risk from accessing the site was not quantified.

[a] Estimated cancer risks printed in bold type equal or exceed the Superfund site remediation threshold of 1E-06 (1 in one million).
[b] Applicable only if the total cancer risk exceeds 1 in one million (estimated risk printed in bold type in column titled "Estimated Total Cancer Risk").

Table 2-17
Risk Characterization Summary for the Southeast Runway Fuel Spill Site: Noncarcinogenic Risks

Scenario	Pathways Quantified	Case	Estimated Total Hazard Index [a]		Chemicals and Pathways that Contribute a Chemical- and Pathway- Specific Noncancer Hazard Quotient Greater than 1 [b]	Primary Site-Specific Uncertainties
			Average	Reasonable Maximum		
Current Scenarios						
Short-Term On-Base Resident (subchronic)	1. Inhalation of vapors and dust	Adult	0	0	None	Lack of subchronic inhalation toxicity values for soil COPCs.
Long-Term On-Base Resident (chronic)	1. Inhalation of vapors and dust	Child Adult	0 0	0 0	None	Duration of residence. Lack of chronic inhalation or oral toxicity values for soil COPCs.
Old Town Galena Resident (chronic)	1. Inhalation of vapors and dust 2. Ingestion of fruits and vegetables (grown in gardens southwest of site) irrigated or subirrigated with groundwater)	Child Adult	0.002 < 0.001	0.006 0.001	None	Assumption that 100% of water required by fruits and vegetables grown in gardens southwest of site is supplied by shallow groundwater either through irrigation or subirrigation. Calculation of uptake of fruits and vegetables of contaminants in groundwater. Risk from accessing the site was not quantified.
New Town Galena Resident (chronic)	1. Inhalation of vapors and dust	Child Adult	0 0	0 0	None	Risk from accessing the site was not quantified. Lack of chronic inhalation or oral toxicity values for soil COPCs.
Short-Term On-Base Worker (subchronic)	1. Inhalation of vapors and dust 2. Incidental ingestion of soil 3. Dermal contact with soil	Adult	0	0	None	Likelihood of workers at the site. Nature and duration of work activities at the site. Lack of subchronic inhalation or oral toxicity values for soil COPCs.
Long-Term On-Base Worker (chronic)	1. Inhalation of vapors and dust 2. Incidental ingestion of soil 3. Dermal contact with soil	Adult	0	0	None	Likelihood of workers at the site. Nature and duration of work activities at the site. Lack of chronic inhaltion or oral toxicity values for soil COPCs.
On-Base Construction Worker (subchronic)	1. Inhalation of vapors and dust 2. Incidental ingestion of soil 3. Dermal contact with soil	Adult	0	0	None	Likelihood of construction activity at the site. Duration of construction activity. Lack of subchronic inhalation or oral toxicity values for soil COPCs.

Table 2-17
(Continued)

Scenario	Pathways Quantified	Case	Estimated Total Hazard Index [a]		Chemicals and Pathways that Contribute a Chemical- and Pathway- Specific Noncancer Hazard Quotient Greater than 1 [b]	Primary Site-Specific Uncertainties
			Average	Reasonable Maximum		
Future Scenarios						
Boarding School Student (subchronic/ chronic)	1. Inhalation of vapors and dust	Student	0	0	None	Extension of facility from Grades 9-12 to Grades 1-12. Risk from accessing the site was not quantified. Lack of subchronic or chronic inhalation toxicity values for soil COPCs.
Old Town Galena Resident (chronic)	1. Inhalation of vapors and dust 2. Ingestion of groundwater 3. Dermal contact with groundwater 4. Inhalation of vapors while showering 5. Ingestion of fruits and vegetables irrigated or subirrigated with groundwater	Child Adult	0.01 0.003	0.02 0.007	None	Use of shallow groundwater as drinking water. Estimated concentrations in groundwater at Old Town Galena are the result of groundwater modeling. Assumption that 100% of water required by fruits and vegetables grown in gardens in Old Town Galena is supplied by shallow groundwater, either through irrigation or subirrigation. Calculation of uptake by fruits and vegetables of contaminants in groundwater. Risk from accessing the site was not quantified.

[a] Hazard indices printed in bold type equal or exceed the Superfund site remediation goal of 1 for noncarcinogens.
[b] Applicable only if the total hazard index exceeds 1.

If, as the evidence suggests, beryllium is not elevated above background in the groundwater at the site and it is removed as a COPC, the estimated cancer risks for scenarios associated with groundwater exposures reduce to less than 1 in one million.

2.3.5 Uncertainty Assessment

The risk characterization results are not fully probabilistic estimates of risk but rather conditional estimates of risk that should be interpreted in light of the considerable number of assumptions required to quantify exposure, intake, and dose-response. Uncertainties associated with identification of COPCs, the exposure assessment, and the toxicity assessment all contribute to the level of confidence that can be placed in the risk characterization results.

In general, risk assessment uncertainty was addressed in the BRA by the following:

1. Incorporating both average and reasonable maximum values for input parameters, whenever possible, to provide a range of results rather than a single value;
2. Erring on the side of conservatism when defining the reasonable maximum case; and
3. Identifying and discussing the major sources of uncertainty and their effect on the risk estimates so that the results can be properly interpreted.

Table 2-18 summarizes the primary sources of uncertainty specific to this assessment and the likely impact on risk estimates.

2.3.6 Conclusions and Recommendations

If the shallow groundwater is not used as tap water and does not provide 100% of the water required by fruits and vegetables consumed by residents, the Southeast Runway Fuel Spill site does not pose an unacceptable health risk to current on-base residents, Old and New Town Galena residents, workers who spend a majority of the workday outside in the immediate vicinity of the site, or to future boarding school students. Even if the groundwater is used as tap water or subirrigates fruits and vegetables, estimated risks are negligible if beryllium is excluded because its presence is not attributable to the site.

On the basis of the results of the human health assessment, there is no need to propose remedial action at the Southeast Runway Fuel Spill site, unless it is shown that beryllium was contributed to the groundwater by site-related activities.

2.4 Ecological Risk Assessment Results

2.4.1 Site Ecology

Ecological features at the Southeast Runway Fuel Spill site include grass, seasonal standing water, and tall vegetation along the dike. The Southeast Runway Fuel Spill site is a shallow ditch lying between the runway to the north and the perimeter dike to the south (Figure 2-3). The site is vegetated primarily with grass and is mowed periodically to keep willows or other tall vegetation from growing too near the runway; however, alders and willows grow along the slope of the dike. Passerine birds such as robins and sparrows frequent the site, but because of human activity, larger wildlife are not common. Several gardens, maintained by Galena residents, grow along the southwestern edge of the site. In the spring, standing water is common in the lowest portions of the site. Surface water from the ditch flows to the west and accumulates against the dike. Waterfowl have been noted utilizing this surface water. Accumulated water evaporates or infiltrates the soil.

2.4.2 Chemicals of Potential Ecological Concern

As discussed in Section 2.1.1, the area of contamination is at the eastern end of the ditch where the fuel line rupture occurred.

Table 2-18
Summary of the Major Uncertainties Associated with the Risk Estimates

Source of Uncertainty	Impact on Risk Characterization
Chemicals of Potential Concern	
Samples representing site media	Could result in an overestimate or underestimate of risks if the samples do not adequately represent media at the site. However, the number and location of samples collected at the site were sufficient to identify the area of contamination in soils and groundwater and assess the magnitude and extent of contamination. Surface soils, however, were defined as encompassing the top two feet of soil. Since exposures are generally limited to the top several inches, inclusion of the top two feet probably overestimates risk for surface soil pathways.
Analytical methods used to test samples	If the analytical methods used do not apply to some chemicals that are present at the site, risks could be underestimated. Since a full suite of analytical methods was selected to test for chemicals known or suspected to be present at the site, the potential for underestimation is reduced.
Presence of beryllium in groundwater at concentrations elevated above background concentrations	The level of confidence in the statistical conclusion that concentrations of beryllium in groundwater are elevated above background concentrations is weak. The maximum detected concentration of beryllium in groundwater is lower than the calculated background UTL for beryllium in groundwater. There is no known or suspected source for beryllium at this site. As a result, calculated risks associated with exposure to beryllium in groundwater are probably no higher than risks of exposure to background concentrations.
Contamination of blanks	Sporadic presence of chemicals in blanks samples was accounted for in blanks comparison. Blanks data do not indicate extensive field or laboratory contaminants.
Tentatively identified compounds	Tentatively identified compounds were not reported or assessed. Most such chemicals are not known to be highly toxic.
Diesel Range Organics and Gasoline Range Organics	DRO and GRO were not evaluated in the risk assessment as groups of chemicals. The assessment addresses individual chemicals only that were speciated by chemical analysis, which includes many constituent compounds of DRO and GRO. However, some constituent compounds were not on the target analyte list. The majority of the risk associated with exposure to DRO and GRO is probably accounted for in an assessment of individual chemicals.

Table 2-18
(Continued)

Source of Uncertainty	Impact on Risk Characterization
Chemicals of Potential Concern (Continued)	
Detection Limit Adequacy	The minimum detection limit for a few analytes in groundwater that were eliminated as COPC (because they were not detected) exceeds the USEPA Region III tap water RBCs. These include several PNAs, SVOCs, and VOCs. The same is not true for analytes in the soil (when compared to Region III residential soil ingestion RBCs). If these analytes are in fact present in the groundwater and were contributed to the groundwater by site-related activities, the estimated risks for this site may be underestimated. However, since 1993 and later sampling events reported uncensored data (where an ND is reported only if there is no instrument response), the impact on the risk estimates is minimized.
Exposure Assessment	
Use of current measured concentrations to represent current and future concentrations in the exposure media	Because concentrations of chemicals in the soils and groundwater at the site may decrease over time as the chemicals migrate and/or degrade, risks estimates for the current scenarios do not necessarily represent risks that will occur in the future.
Inclusion of groundwater pathways	Most Old Town Galena residents have their drinking water trucked in from the New Town area; however, there are at least seven wells still in use in the Old Town area (USAF, 1995b). Use of the shallow groundwater for tap water, therefore, cannot be ruled out. Risks associated with use of the shallow groundwater do not apply to residents who use other sources of water for domestic purposes.
Groundwater modeling	Results of groundwater modeling are indicative of worst-case concentrations that might reach Old Town Galena and the Yukon River. Impacts are likely overestimated for groundwater pathways.
Estimation of plant uptake of COPCs from groundwater	Models to estimate plant uptake of chemicals are extremely simplified and could lead to an over- or underestimate of COPC concentrations in fruits and vegetables. Since the shallow groundwater is assumed to provide 100% of the plants' water requirements, either through irrigation or subirrigation, the concentrations in fruits and vegetables are probably overestimated.
Access to site	Access to the site is open. On-base residents and Galena residents are not restricted from walking on the site. Exposure of a roaming resident was not quantified (see discussion in Section 3 of Volume 1). If a resident spends a significant amount of time in the area of the site, estimated risks for that resident may be underestimated.

Table 2-18
(Continued)

Source of Uncertainty	Impact on Risk Characterization
Exposure Assessment (Continued)	
Construction worker scenario	Since construction is unlikely to occur at the site, estimated risks for the construction worker scenario do not represent a current or likely future population. The exposure duration for this scenario is biased high.
Exposure parameter estimation	The standard assumptions regarding body weight, period exposed, life expectancy, and population characteristics may not be representative of any actual exposure situation. Some assumptions may underestimate risks, but most probably overestimate risk. In some cases, nonstandard assumptions were used for site-specific reasons, such as the reasonable maximum exposure duration of 70 years for Galena residents. The use of a 14-year exposure duration for the boarding school student overstates the likely duration of residence for most students.
Toxicity Assessment	
Absence of toxicity values for some chemicals detected at the site	Lack of toxicity values may result in underestimation of risk; however, most chemicals that lack toxicity values are not very toxic or carcinogenic. Therefore, the degree of underestimation is probably low.
Use of unverified toxicity values for some chemicals	Could result in an overestimate of risk. However, chemicals with unverified toxicity values do not contribute significantly to estimated risks at the site.
Bases for derivation of toxicity values	Some common sources of uncertainty in toxicity values include 1) use of information obtained from dose-response studies conducted in laboratory animals to predict effects that are likely to occur in humans; 2) use of dose-response information from effects observed at high doses to predict adverse health effects that may occur at the low levels to which humans are likely to be exposed in the environment; 3) use of information obtained from short-term exposure studies to predict health effects in humans exposed on a long-term basis; 4) use of toxicity values that have been developed for one route of exposure and employing it under a different exposure route; and 5) use of information gathered in studies using homogeneous animal populations (inbred strains) or health human populations (occupational exposures) to predict the effects that are likely to occur in the general human population.

Table 2-18
(Continued)

Source of Uncertainty	Impact on Risk Characterization
Toxicity Assessment (Continued)	
Absence of dermal toxicity values	Unadjusted oral toxicity values were used to evaluate dermal exposures. Since most oral values are based on administered dose and dermal exposure is quantified as an absorbed dose, risks from dermal exposure might be underestimated. PNAs were not evaluated for dermal exposures per USEPA guidance (see discussion in Section 3 of Volume 1). PNAs are associated with neoplasia in a variety of mammalian systems. The inability to quantify risks from dermal exposure to PNAs results in an underestimation of risks for the dermal pathway for PNAs.
Possible synergistic or antagonistic effects of exposure to multiple chemicals	Unknown impact on risk estimates. Chemical- and pathway-specific risk and hazard quotients are summed to account for possible additive effects.
Risk Characterization	
Applicability of cancer risk estimation methodology to subchronic exposure durations	The estimated intake for cancer risk estimation is averaged over a 70-year period. Exposure to higher concentrations of potential carcinogens for a short duration of time probably does not have the same effect as exposure to lower concentrations over a long duration.

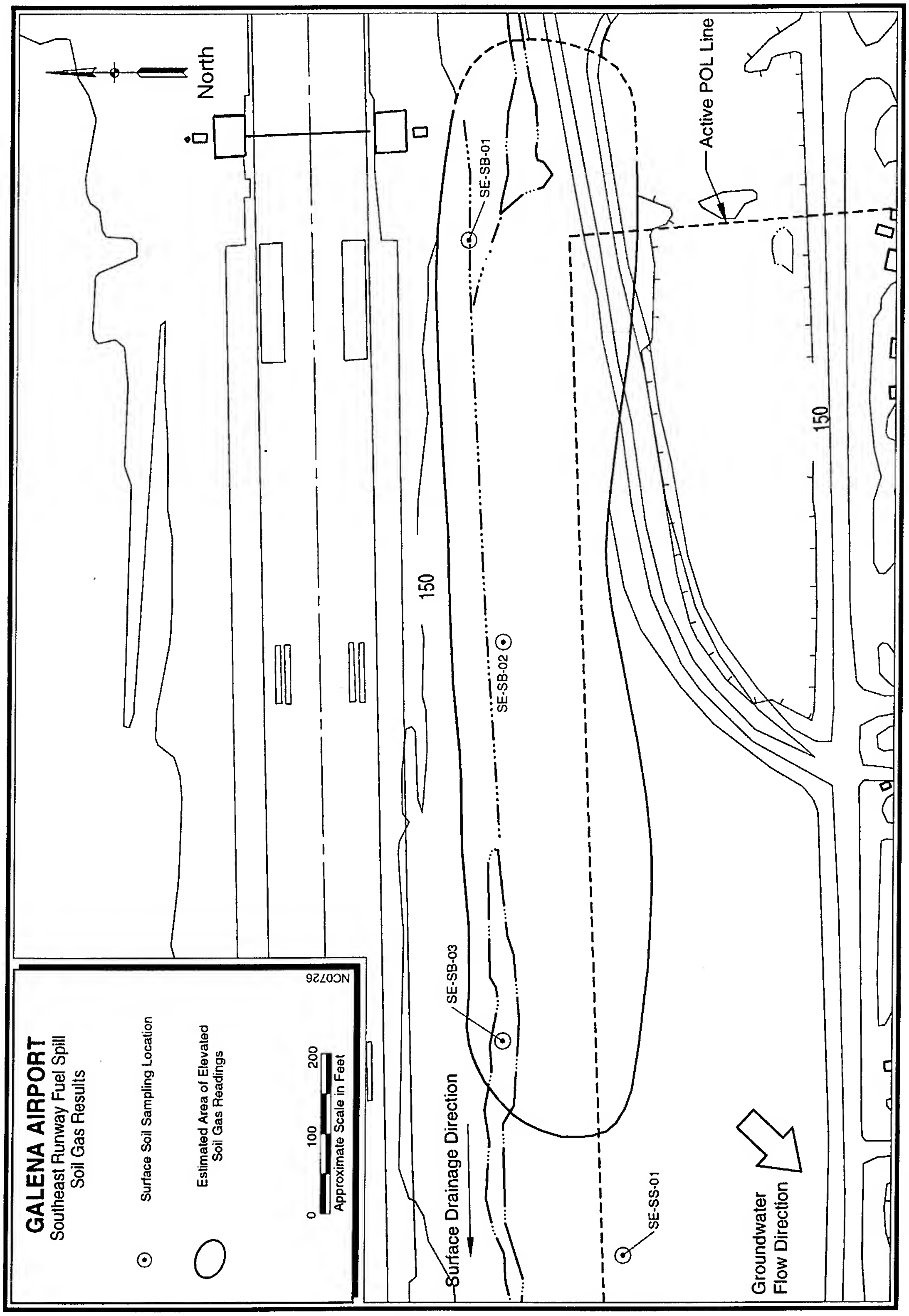


Figure 2-3. Southeast Runway Fuel Spill

Surface water samples were not taken to address the contamination in runoff; however, lower concentrations of petroleum-related compounds have been found in surface soils along the ditch and may reflect residual diesel from spills or runoff from the runway (USAF, 1995b). Surface water is only present a few weeks of the year. Groundwater that discharges to the Yukon River was modeled (see Appendix 4C). COPECs for the Southeast Runway Fuel Spill site are presented in Table 2-19. Section 3.2.2 of Volume 1 details the methods of COPEC identification. COPECs from surface soil were used to address terrestrial receptors, and discharged groundwater COPECs were used to evaluate aquatic and semiaquatic receptors at the shoreline on the banks of the Yukon River. This table includes all chemicals, by medium, that were not eliminated as essential nutrients and with detection results greater than background and blank concentrations.

2.4.3 Exposure Assessment

Figure 2-4 shows the conceptual model for potential receptors and exposure pathways at the Southeast Runway Fuel Spill site. Receptors at the Southeast Runway Fuel Spill site include both terrestrial and aquatic species. Surface soil contamination could affect receptors by contact (ingestion and dermal) with soils and/or ingestion of plants that have taken up the contaminants. Inhalation of vapors and/or fugitive dust also could be a route of exposure. Surface water accumulates against the dike and evaporates or infiltrates the soil. Waterfowl may be present during periods of flooding in this area. Groundwater migration of contaminants to the Yukon River water and shoreline is evaluated for the aquatic and semiaquatic (i.e., shoreline habitats) pathways.

Tables 2-20 and 2-21 list the assessment and measurement endpoints for the Southeast Runway Fuel Spill site. Plants, invertebrates, robin, American kestrel, meadow vole, and red fox represent the terrestrial receptors. Aquatic invertebrates, spotted sandpiper, and northern pike represent the aquatic receptors. Figures 3-5 and 3-6 in Volume 1, Section 3 depict the trophic food chains graphically.

2.4.4 Effects Assessment

Ecological quotients (EQs) were calculated for the assessment endpoint species at the Southeast Runway Fuel Spill site. The results of this evaluation are presented in Table 2-22 for the terrestrial trophic system and Table 2-23 for the aquatic and semiaquatic system. Supporting spreadsheets are presented in Appendix 4M.

2.4.5 Ecological Risk Characterization

Tables 2-24 and 2-25 list the EQ values greater than 1 for the terrestrial and aquatic species, respectively. These tables also provide the order of magnitude of the EQ values (i.e., $1 \leq EQ < 10$).

2.4.6 Uncertainty Assessment

Uncertainty occurs in almost every step of the ecological risk assessment (ERA) process. As stated previously, uncertainty is often addressed by making intentionally biased (health-conservative) assumptions so that impacts will not be underestimated. Individual assumptions are therefore conservative, but because of compounded bias the calculated EQs are biased higher than any individual assumption. Table 3-9 in Volume 1, Section 3 lists the uncertainties associated with the ERA, including the Southeast Runway Fuel Spill site. Uncertainties specific to the Southeast Runway Fuel Spill site are listed in Table 2-26.

2.4.7 Conclusions and Recommendations

EQs greater than 1 were noted in each of the trophic pathways. Each pathway is discussed below.

Terrestrial—Mammal (soil → plant → meadow vole → red fox)

Table 2-24 lists the species and order of magnitude of the EQs that exceed 1. Table 2-22 provides a summary of all of the terrestrial EQs calculated. EQs greater than 1 were not noted for the red fox. Adequate toxicity information was found in the literature for the red fox;

Table 2-19
Chemicals of Potential Ecological Concern in Surface Soil and Discharged Groundwater from the Southeast Runway Fuel Spill

Chemical	Media	
	Surface Soil [a]	Discharged Groundwater
Metals		
Beryllium		X
Lead	X	
PNAs		
2-Methylnaphthalene	X	X
Acenaphthene		X
Anthracene	X	
Benzo(a)anthracene	X	
Benzo(a)pyrene	X	
Benzo(b)fluoranthene	X	
Benzo(g,h,i)perylene	X	
Benzo(k)fluoranthene	X	
Chrysene	X	
Dibenz(a,h)anthracene	X	
Fluoranthene	X	
Fluorene		X
Indeno(1,2,3-cd)pyrene	X	
Naphthalene	X	X
Phenanthrene	X	X
Pyrene	X	
Semi-volatiles		
Benzyl alcohol		X
bis(2-ethylhexyl)phthalate	X	
Di-n-butylphthalate		X
Volatiles		
1,2-Dichloroethane		X

Table 2-19
(Continued)

Chemical	Media	
	Surface Soil [a]	Discharged Groundwater
Benzene		X
Chloroethane		X
Chloroform		X
Chloromethane		X
Ethylbenzene		X
Toluene		X
Trichloroethene		X
Xylenes (m,p, and o)		X

[a] Soils were analyzed for fuel-related compounds only; therefore, lead was the only metal analyzed in soil.

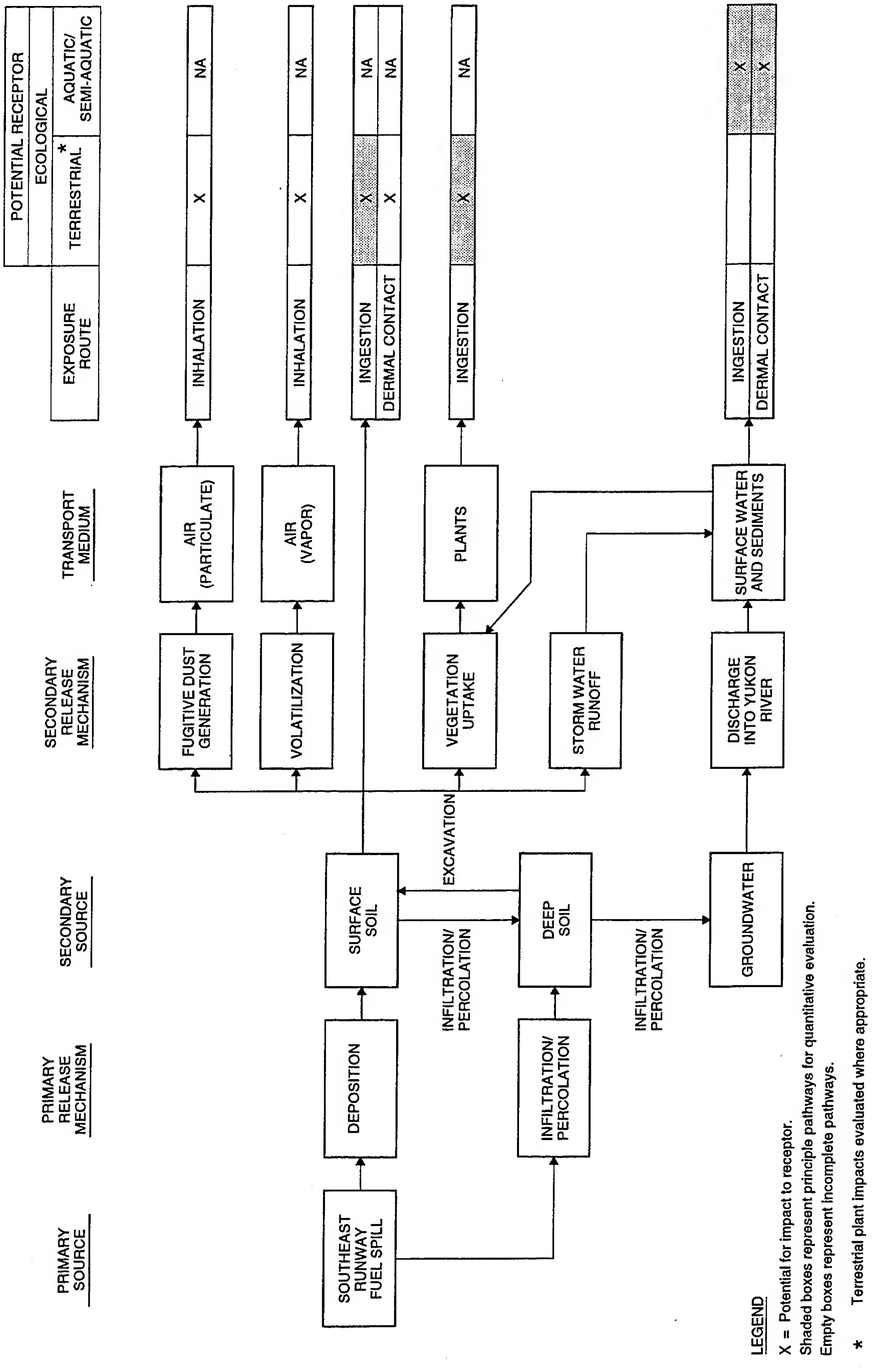


Figure 2-4
Conceptual Site Model Showing Potential Ecological Receptors and Exposure Pathways at the Southeast Runway Fuel Spill

Table 2-20
Assessment and Measurement Endpoints for the Evaluation of Terrestrial Ecosystems at the Southeast Runway Fuel Spill Site

Assessment Endpoint	Measurement Endpoint
Decrease in herbaceous plant survivorship.	Experimental effects such as reduced plant growth taken from available literature.[a]
Decrease in terrestrial invertebrate, robin, and American kestrel productivity and local population survivorship.	LOAELs [b] with effects such as decrease in eggshell thickness or reduced survival.
Decrease in meadow vole and red fox productivity and local population survivorship.	LOAELs[b] with effects such as decrease in litter number or reduced survival.

[a] Species-specific information will be used whenever possible, but plants may have to be aggregated because there may be insufficient phytotoxicity data or plant uptake data to perform taxon-specific assessments.
[b] If lowest observed adverse effect levels (LOAELs) are unavailable, lethal dose - 50% (LD_{50}) were used.

Table 2-21
Assessment and Measurement Endpoints for the Evaluation of Surface Water [a] Contamination Originating at the Southeast Runway Fuel Spill Site

Assessment Endpoint	Measurement Endpoint
Decrease in aquatic invertebrate productivity and local population survivorship.	AWQC for the protection of aquatic life.[b]
Decrease in spotted sandpiper productivity and population survivorship.	LOAELs [c] with effects such as decreased eggshell thickness or reduced survival.
Decrease in local northern pike productivity and population survivorship in the Yukon River.	LOAELs with effects such as decreased gamete production, growth rate, or reduced survival.

[a] The aquatic ecosystem is the Yukon River. Individual surface water areas include shoreline that may exist part of the year. Modeled groundwater discharge concentrations that potentially migrate from the site to the shoreline and Yukon River were used.
[b] If ambient water quality criteria (AWQCs) are unavailable (including AWQC-recommended LOELs), LC_{50} values were used.
[c] If LOAELs are unavailable, LC_{50} values were used.

Table 2-22
Summary of Terrestrial EQs

Chemical	EQ Terrestrial Plants	EQ Meadow Vole	EQ Red Fox	EQ Terrestrial Invertbrate	EQ Robin	EQ Kestrel
2-Methylnaphthalene	a	3.55E-03	1.33E-06	a	a	a
Anthracene	a	1.08E-02	6.93E-06	a	a	a
Benzo(a)anthracene	a	**5.42E+00**	8.18E-03	a	a	a
Benzo(a)pyrene	a	**1.27E+00**	2.66E-03	4.96E-01	a	a
Benzo(b)fluoranthene	a	2.73E-01	5.41E-04	a	**1.09E+01**	1.74E-02
Benzo(g,h,i)perylene	a	**5.28E+00**	1.22E-02	a	a	a
Benzo(k)fluoranthene	a	1.56E-01	3.10E-04	a	a	a
bis(2-Ethylhexyl)phthalate	a	1.80E-04	8.79E-06	a	**1.09E+00**	5.76E-02
Chrysene	a	1.80E-01	2.69E-04	a	a	a
Dibenz(a,h)anthracene	a	3.96E-01	4.94E-01	a	a	a
Fluoranthene	a	1.32E-02	1.14E-05	a	a	a
Indeno(1,2,3-cd)pyrene	a	5.51E-01	2.25E-04	a	a	a
Lead	**1.02E+00**	2.54E-02	8.40E-05	a	5.06E-01	2.79E-04
Naphthalene	a	1.62E-03	4.79E-08	5.92E-02	2.38E-03	3.68E-06
Phenanthrene	a	2.17E-02	1.16E-05	2.48E-01	8.17E-03	2.21E-05
Pyrene	a	3.88E-02	4.27E-04	a	a	a

a = no toxicity data available

Table 2-23
Summary of Aquatic EQs

	Aquatic Invertebrate	Spotted Sandpiper	Northern Pike
1,2-Dichloroethane	1.03E-05	2.69E-05	1.27E-09
2-Methylnaphthalene	**2.30E+02**	a	1.23E-02
Acenaphthene	2.25E-05	a	2.18E-09
Benzene	5.08E-07	a	8.27E-09
Benzyl alcohol	4.93E-01	a	4.78E-05
Beryllium	1.76E-01	a	6.10E-03
Chloroethane	a	a	a
Chloroform	5.32E-06	a	5.16E-10
Chloromethane	2.62E-06	a	1.11E-09
Di-n-butylphthalate	6.87E-03	8.03E-03	6.65E-07
Ethylbenzene	1.38E-02	a	7.39E-06
Fluorene	**3.59E+03**	a	4.25E-03
m&p-Xylenes	9.91E-01	6.87E-03	9.56E-07
Naphthalene	3.41E-03	3.20E-02	3.30E-07
o-Xylene	3.80E-01	2.64E-03	3.55E-07
Phenanthrene	6.31E-04	2.36E-04	6.12E-07
Toluene	5.27E-14	a	2.52E-17
Trichloroethene	1.55E-06	a	1.51E-10

a = no toxicity data available

Table 2-24
EQ Values Greater than 1 for Terrestrial Species at the Southeast Runway Fuel Spill

Chemical	EQ	
	1 - 9.9	≥10
Benzo(a)anthracene	Meadow Vole	
Benzo(a)pyrene	Meadow Vole	
Benzo(b)fluoranthene		Robin
Benzo(g,h,i)perylene	Meadow Vole	
bis(2-Ethylhexyl)phthalate	Robin	
Lead	Plant	

Note: There are no EQs greater than 1 for red fox or kestrel.

Table 2-25
EQ Values Greater than 1 for Aquatic and Semiaquatic Species at the Southeast Runway Fuel Spill

Chemical	EQ	
	1 - 9.9	≥10
2-Methylnaphthalene		Invertebrate
Fluorene		Invertebrate

Note: There are no EQs greater than 1 for northern pike or spotted sandpiper.

Table 2-26
Uncertainties of ERA at the Southeast Runway Fuel Spill Site

Parameter	Assumption	Uncertainty
Pathway: Soil → Plant → Meadow Vole → Red Fox		
Toxicity Data	Adequate toxicity information was not available to assess impacts to plants. The site visit and modeling of contaminants through the food chain provided the assessment in this ERA for plants.	Impacts to plants could be greater or less than this ERA predicted. The uncertainty would be low-high, bias neutral.
Surface soil exposure	Surface soil samples were taken from 0-2 ft. and composited. This sample is assumed to represent the surface soil available to ecological receptors (Meadow vole).	The method may overestimate exposure concentrations, especially volatiles in the 2 ft anoxic range. The magnitude of the uncertainty would be high, bias high.
Pathway: Soil → Invertebrate → Robin → Kestrel		
Toxicity data	Adequate toxicity data was not available to assess impacts to terrestrial invertebrates. The food chain assessment provided the mechanism for evaluating contaminants through invertebrates.	Impacts to terrestrial invertebrates could be higher or lower. The uncertainty would be low-high, bias neutral.
Use of BCFs or BAFs	BAFs are more representitive of terrestrial bioaccumulation than BCFs; however, when BAFs were unavailable for terrestrial receptors, BCFs were used.	BAFs may be more or less representative of terrestrial bioaccumulation. When a BCF was used, bias would be high because BCFs represent bioconcentration from submersion in the medium. Magnitude of uncertainty would be low.
Pathway: Surface water → Pike		
Groundwater migration	Groundwater beneath the POL migrates and is discharged to the Yukon River where exposure to the pike occurs.	Concentrations were modeled from the POL to the shoreline with no commingling or interferences. The magnitude of the uncertainty would be low, bias neutral.
	Groundwater modeling accurately estimated the concentration of COPECs in the Yukon River.	Dilution factors may not represent conditions in the Yukon. Concentrations may be higher or lower. Magnitude of uncertainty would be low-high, bias neutral.
Assessment endpoint species - Pike	Pike are present in the Yukon River near Galena all year.	Pike are present in the general area but may not be near Galena all year. The ERA assumption is conservative, uncertainty would be low, bias high.

Table 2-26
(Continued)

Parameter	Assumption	Uncertainty
Pathway: Surface water → Invertebrates → Spotted sandpiper		
AWQC	AWQC are protective of most aquatic life and are conservative measurement endpoints.	AWQC may be more or less conservative than necessary for aquatic invertebrates at the Galena Airport shoreline. The magnitude of the uncertainty would be low, bias high.
Groundwater migration	Groundwater modeling accurately estimated the concentration along the mudflats/shoreline.	No dilution, volatility factors or attenuation was applied to these concentrations. Actual exposure concentrations are likely much lower than predicted. The magnitude of uncertainty would be low, bias high.
Exposure concentration and time	Invertebrates and sandpiper are exposed to the estimated concentrations at the mudflats during entire time species are on site.	Invertebrates may remain in a small geographic area and could be exposed to discharging groundwater continually. However, the spotted sandpiper is mobile and this assumption is highly conservative. The magnitude of uncertainty is low, bias high.
	The spotted sandpiper's water intake is 100% from the discharging groundwater.	The spotted sandpiper travels along the shorelines searching for food. To assume that 100% of water intake is from discharging groundwater is highly conservative. The magnitude of uncertainty is low, bias high.
Bioavailability of COPECs	All COPECs were assumed to be 100% bioavailable.	Bioavailability changes as physical conditions such as pH or % carbon change. This assumption is conservative. The magnitude would be low-high, bias high.
Bioconcentration factors	Bioconcentration factors (BCF) were applied to estimated invertebrate tissue concentrations of COPECs.	BCFs can vary depending on condition of the study that determined the BCF. Applied to this ERA, they may over or underestimate tissue concentrations. Magnitude of uncertainty is low-high, bias neutral.

however, this was not the case with terrestrial plants. Despite searches of the Phytotox Data Base and Hazardous Substance Data Base (HSDB), little applicable information was found; therefore, impacts to plants from soil contaminants at the Southeast Runway Fuel Spill site could not be adequately assessed with the exception of lead. Lead had an EQ of 1.02 in terrestrial plants. The toxicity benchmark (TB) for terrestrial plants was the lowest observed effect concentration (LOEC) that gave a greater than 20% reduction in plant growth. These tests were conducted by amending natural soils with lead to mimic wild conditions (Suter, Will, & Evans, 1993). The fate of lead in soil is dependent on such factors as soil pH, organic matter content in soil, the presence of inorganic colloids and iron oxides, ion-exchange characteristics, and the amount of lead in soil. Lead is strongly sorbed to organic matter in soil, and little is transported into surface water or groundwater. Plants and animals may bioconcentrate lead, but biomagnification has not been detected (ATSDR, 1991b). Although lead is found in most plants and some beneficial applications of lead have been reported, lead is not considered to be an essential element for plants (Demayo, Taylor, Taylor, & Hodson, 1982). At a pH of 4 to 6, the organic lead complexes may become soluble and leach out or may be taken up by plants (ATSDR, 1991b); however, the capacity of soil to bind lead by precipitation, sorption, and chelation indicates that probably very little of the total lead content of soil is available for plant uptake. The ratio of lead concentration in soil water to lead concentration in soil ranges between 0.00003 and 0.0031 depending on the pH, and the humus and clay content of the soil. The total lead content of agricultural soil ranges from 2 to 200 mg/kg with a mean of 16 mg/kg and that of "soluble" lead from 0.05 to 5 mg/kg (Demayo et al., 1982). The 95% UCL of lead in soil at the Southeast Runway Fuel Spill site was 50.8 mg/kg. This value is above the mean value in an agricultural soil, but is well within the range. The TB is based on the soluble form of lead and therefore represents an elevated estimate of exposure to terrestrial plants. There were no adverse impacts projected to occur in the meadow vole or red fox. Given the extreme conservatism associated with the terrestrial plant benchmark, the low EQ (1.02) for plants and the lack of impacts to the higher trophic levels, and the abundance of healthy and prolific plant life, the effects of lead on plant life at the Southeast Runway Fuel Spill site is expected to be minimal.

Uptake of the contaminants into plants was modeled (see section 3.2.2 of Volume 1 for methodology) to assess intake by the meadow vole. Several PNAs were noted in the meadow vole with EQs greater than 1 (benzo(a)anthracene, EQ = 5.42, benzo(a)pyrene, EQ = 1.27, and benzo(g,h,i)perylene, EQ = 5.28). Although EQs between 1 and 10 are categorized as indicating possible risk, the potential for risk from PNAs in this EQ category is likely to be insignificant because current data indicate that vertebrates metabolize PNAs (Eisler, 1987), and the PNAs remain bound to soil particles in the gastrointestinal tract and therefore are not accumulated (ATSDR, 1993). Table 2-27 indicates that between 52% and 78% of the EQ was contributed by soil, but it is assumed in the ERA model that 100% of the PNAs are absorbed by the meadow vole. Sorption of PNAs to soil and sediments increases with increasing organic carbon content and is also directly dependent on particle size. Sources of PNAs include petroleum products, wood fires, automotive emissions, and tobacco smoke. PNAs are ubiquitous in soil. Background concentrations for benzo(a)pyrene range from 2 to 1300 μg/kg in rural soil, 4.6 to 900 μg/kg in agricultural soil, and 165 to 200 μg/kg in urban soil (ATSDR, 1993). The 95% UCL of benzo(a)pyrene in soil at the Southeast Runway Fuel Spill site was 496 μg/kg. This was the highest concentration of the PNAs with EQs greater than 1 at the Southeast Runway Fuel Spill site. This concentration is within the rural and agricultural soil background level.

Table 2-27
Percent Contribution to Meadow Vole and Robin EQs by Soil and Food Intake

Chemical	EQ	% EQ Soil	% EQ Food
Meadow Vole [a]			
Benzo(a)anthracene	5.42	52	48
Benzo(a)pyrene	1.27	70	30
Benzo(g,h,i)perylene	5.28	78	22
Robin [b]			
Benzo(b)fluoranthene	10.9	27	73
bis(2-Ethylhexyl)phthalate	1.09	0.2	99.8

[a] The percent contribution to the EQ by food ingestion for the meadow vole is due to the ingestion of plants.
[b] The percent contribution to the EQ by food ingestion for the robin is due to the ingestion of soil invertebrates.

In summary, there appears to be no potential risk to the higher trophic level consumers such as the red fox, and minimal risk to the meadow vole and terrestrial plants at the Southeast Runway Fuel Spill site. Results of the risk evaluation for plants were inconclusive, except for lead. Given the extreme conservatism associated with the terrestrial plant benchmark, the low EQ (1.02) for plants and the lack of impacts to the higher trophic levels, and the site lead level being within the general background agricultural levels, effects of lead to terrestrial plants would be minimal. Several PNAs were noted in the meadow vole with EQs greater than 1 (benzo(a)anthracene, benzo(a)pyrene, and benzo(g,h,i)perylene). Although all of these EQs were greater than 1, they were also less than 10, and are categorized as indicating possible risk; however, the potential for risk from PNAs in this EQ category is likely to be insignificant because current data indicate that vertebrates metabolize PNAs (Eisler, 1987), and the PNAs remain bound to soil particles in the gastrointestinal tract and therefore are not accumulated. Owing to the low EQ levels of these PNAs, low concentrations of PNAs when compared with other sites, lack of impact to the red fox, and physical and biological processes that limit the vertebrate toxicity, the effects of PNAs to the mammals in the terrestrial ecosystem are expected to be minimal.

Terrestrial—Avian (soil → invertebrate → robin → kestrel)

Table 2-24 lists the compounds and magnitude of the EQs greater than 1. Earthworm bioaccumulation factors (BAFs) were used to estimate contaminant travel through the terrestrial food chain when they were found in the literature. If earthworm BAFs were not available, then aquatic BCFs were used; however, this probably overestimates the bioaccumulation that occurs in terrestrial systems. When evaluating avian toxicity, only toxicity endpoint data specific to birds were used.

As with the plant toxicity, little soil invertebrate toxicity information was found. Several TBs were identified; however, none of the EQ results were above 1. Additionally, there were no EQs above 1 for the kestrel. For the robin, benzo(b)fluoranthene was the only contaminant evaluated with an EQ above 10 at 10.9. The only other chemical with an EQ above 1 for the robin was bis(2-ethylhexyl)phthalate, with an EQ of 1.09. Benzo(b)fluoroanthene is a PNA, and as described above in the terrestrial mammal section, the potential for risk from PNAs is likely to be insignificant because current data indicate that vertebrates metabolize PNAs (Eisler, 1987), and the PNAs remain bound to soil particles in the gastrointestinal tract and therefore are not accumulated (ATSDR, 1993). Information is limited on avian PNA toxicity. The avian toxicity datum for benzo(b)fluoranthene was a single injection of the compound into a developing chicken embryo; the effect was a decrease in survival. A large uncertainty factor had to be applied to the toxicity data to calculate the TB because of the acute exposure time and the taxonomic differences between the test species and the assessment endpoint species. Other evidence of avian ingestion of PNAs suggest that a diet containing 4000 mg of PNAs/kg does not cause adverse ecological impacts (Eisler, 1987). The calculated oral intake for the robin at the Galena Airport was 0.0164 mg/kg. There is evidence that embryo toxicity in avian species can be caused by relatively small exposures to PNAs in petroleums (Eisler, 1987). This "worst case" exposure is represented by the TB used in this assessment. The applicability of this exposure route is dependent on several factors, including the form of the PNAs at the Southeast Runway Fuel Spill site and the use of the Southeast Runway Fuel Spill site as a breeding area for avian species. During the yearly flood, soil contaminants such as PNAs could be transported to the surface by the rising waters. These contaminated surface waters could potentially contact ecological receptors, especially as water accumulates at the dike. The Southeast Runway Fuel Spill site is vegetated with alders and other

tall vegetation on the slope of the dike. Perching birds are commonly observed and nesting could occur in this vegetation. Because of the high quality of habitat along the dike, the propensity of birds, possible transport and exposure mechanisms of contaminants to avian receptors, adverse impacts to avian receptors (especially eggs and young birds) could occur; however, the ability of vertebrate systems to metabolize PNAs and the strong adsorption of these compounds to soils limits the exposures and toxicities. Potential impacts to avian receptors at the Southeast Runway Fuel Spill site by PNAs are therefore given a medium rating.

The EQ for bis(2-ethylhexyl)phthalate in the robin was calculated to be 1.09. Bis(2-ethylhexyl)phthalate is bioconcentrated and the compound has been observed in invertebrates, fish, and terrestrial organisms; however, accumulation of bis(2-ethylhexyl)phthalate is likely to be minimized by metabolism, and biomagnification in the food chain is not expected to occur. This has been confirmed by the detection of metabolites in animal tissues (ATSDR, 1991a). A ringed dove NOAEL (1.11 mg/kg/day) was adjusted to the robin (NOAEL = 1.39 mg/kg/day). No significant reproductive effects were observed among doves on diets containing 10-ppm bis(2-ethylhexyl)phthalate, and the study considered exposure over four weeks and during a critical life stage (Opresko, Sample, & Suter, 1994). The robin intake at the Galena Airport was calculated to be 1.51 mg/kg/day. This level is well below the diet of the doves in the toxicity study. Because of the potential for metabolism of bis(2-ethylhexyl)phthalate, lack of adverse impacts to the kestrel, and low EQ in the robin, the effects of bis(2-ethylhexyl)phthalate to the avian ecosystem at the Southeast Runway Fuel Spill site are expected to be minimal.

Aquatic (surface water → pike)

This exposure pathway considered groundwater beneath the Southeast Runway Fuel Spill site that could migrate to the Yukon River, where exposure to the northern pike potentially could occur. None of the COPECs evaluated in this assessment showed an EQ above 1 for the northern pike. Ambient water quality criteria (AWQC) were used as the measurement endpoints when they existed. AWQC are highly conservative since they are designed to protect most aquatic life.

Semiaquatic (surface water → aquatic invertebrate → spotted sandpiper)
Aquatic Invertebrate

This exposure pathway used modeled concentrations of contaminants in groundwater discharging to the surface at the Yukon River shoreline. No dilution or volatility factors were applied to the discharged concentrations. EQs greater than 1 were noted for the aquatic invertebrates and are shown in Table 2-25. Fluorene and 2-methylnaphthalene had EQs above 10 in the aquatic invertebrate. There were no EQs above 1 for the spotted sandpiper. AWQC were used to evaluate impacts to aquatic invertebrates; however, AWQC were not available for 2-methylnaphthalene or fluorene. High uncertainty factors were applied to these TBs since acute LC_{50} values were used.

2-Methylnaphthalene and fluorene are the only PNAs, and the only organic compounds, with EQs greater than 1 for the aquatic invertebrate. PNAs vary substantially in their toxicity to aquatic organisms. In general, toxicity and bioconcentration factors tend to increase as molecular weight increases (Eisler, 1987). Fluorene and 2-methylnaphthalene are both low molecular weight PNAs, with molecular weight values of 166.2 and 142.2 respectively (ATSDR, 1993), indicating low potential for bioconcentration or toxicity when compared to high molecular weight PNAs. Uptake of PNAs is highly species specific, being higher in algae, molluscs, and other species that are incapable of metabolizing PNAs. There is evidence indicating that age and body size of the invertebrate are important modifiers in PNA accumulation dynamics. PNA levels in fish and higher trophic levels are usually low because they are rapidly metabolized (Eisler, 1987). Because of the low

potential for bioconcentration or toxicity from low molecular weight PNAs, and the ability of higher trophic levels to metabolize PNAs, the adverse impacts from fluorene and 2-methyl-naphthalene are expected to be minimal.

In general, ecological risk from contaminants at the Southeast Runway Fuel Spill site is expected to be minimal. PNAs could affect avian reproduction if birds are exposed to the contaminants during the breeding season. The impacts of PNAs to mammals such as small rodents are expected to be minimal. Impacts to higher trophic levels such as the red fox, kestrel, and spotted sandpiper are not expected to occur. PNAs in the groundwater that may discharge to the shoreline are not expected to affect ecological receptors adversely. The habitat quality at the shoreline is medium to low owing to human activities that limit the potential for exposure.

Section 3
CONTROL TOWER DRUM STORAGE AREA, SOUTH

Section 3 contains a site-specific BRA for the CTDSA. Section 3.1 provides a description of the site and Section 3.2 summarizes data evaluation. Section 3.3 presents the human health risk assessment results. Section 3.4 presents the ecological assessment results.

3.1 Site Description

The CTDSA is a former storage area where spills and regular dumpings occurred from drum handling from the 1940s to the 1960s. As described in the Phase I Records Search Report (USAF, 1985), the site (Spill/Leak No. 1) is an unpaved area located between the runway and apron on which was stored a large number of drums (stacked horizontally about 3 high and 10 wide) containing unused AVGAS, JP-4, JP-1, diesel fuel, solvents, thinners, cooking fuel, and possibly some waste products. Unused drum residues were reportedly dumped on the ground regularly prior to shipping the empty drums off site. Aerial photographs (dating from 1963 to 1971) indicate that the drum-holding area extended from the southeastern quadrant of the present-day air services parking ramp to 600 ft east of the control tower (approximately 500 ft south of the dike road).

The site is situated on level graded gravel fill. Frozen soils were encountered in boreholes from 10 and 30 ft bgl at the eastern and western portion of the site, respectively; however, no permafrost was encountered at the center of the site. Subsurface soils consist of coarse and fine silty sands with traces of natural organic material.

The CTDSA is located almost entirely within the building restriction line (see Figure 2-2 in Volume 1); therefore, future development/building construction in most of this area is not possible as long as the airport remains operational.

3.1.1 Sources of Contamination

The CTDSA was used to store drums as late as the 1970s, as verified by aerial photographs. The presence of contamination is supported by boring logs from the construction of the control tower that document the presence of fuel odor from soil down to the groundwater level (Norman Burgett, personal communication, October 1992). Sampling was performed during the Stage 1 RI (1986 to 1988), but the area investigated did not include the eastern boundary of the storage area as shown in the aerial photographs. The Stage 1 RI did include an area to the north, where 20,000 to 30,000 gal. of diesel fuel was suspected to have been discharged to the ground from a POL fuel line leak (referred to as Spill/Leak No. 2 [ST003]; USAF, 1985).

During the Stage 1 RI, soil samples were collected from 19 borings drilled to the water table (approximately 15 ft below ground surface) and analyzed for total petroleum hydrocarbons (TPH), volatile organic compounds (VOCs), and lead. Low levels of TPH contamination were detected in soils at or near the water table, and BTEX components (< 600 ppb total BTEX) and lead (maximum 59 mg/kg) were also detected in subsurface soil samples. Three monitoring wells were drilled to approximately 30 ft. Groundwater samples were collected and analyzed for petroleum hydrocarbons, purgeable halocarbons and aromatics, and lead. Groundwater samples from all three wells contained low levels of toluene and lead; two wells contained low levels of benzene. Trichloroethene (TCE) was detected in one well at low levels (USAF, 1989).

Also during the Stage 1 RI, a soil gas survey was conducted with a gas chromatograph (GC) to analyze TPH vapors extracted from probes driven into the ground. The highest values were detected at the center and western boundary of the original CTDSA investigation area, where soil gas concentrations were approximately 10 ppmV TPH.

3.1.2 RI Activities

Field investigations conducted at the CTDSA from 1993 to 1995 include a soil gas survey and field TPH screening, collection of groundwater samples from two preexisting monitoring wells, and collection of six surface soil samples. All sample locations are shown in Figure 3-1. The analytical results for soil and water samples are presented in Appendix A of the RI report (USAF, 1995b).

Because the Stage 1 RI did not encompass the entire extent of the former CTDSA, additional field screening was performed in 1993. At 22 locations (in two lines covering the length of the former drum storage area) soil vapor was withdrawn and analyzed with a PID and flame ionization detector (FID). In addition to the soil gas survey, 14 shallow soil samples (5 ft bgl) were collected from within the CTDSA and analyzed for aromatic hydrocarbons (AH) and TPH using the field IR method. Sample locations and soil gas survey results are shown in Figure 3-1.

The 1993 soil gas data from the CTDSA show sporadic high VOC concentrations. The results from the soil TPH/AH screening indicate low to moderate concentrations of hydrocarbons. These data are in agreement with the findings of the Stage 1 RI and may be characteristic of a drum storage area where spills and leaks result in high levels of contamination over a limited areal extent. Hot spots, which may result from these types of releases, were detected at six soil gas sample locations: A-02, A-08, A-11, B-03, B-09, and B-11 (see Figure 3-1).

Six surface soil samples were collected at the CTDSA in 1995 to determine the nature of the soil contamination at the site. The sample locations, shown in Figure 3-1, were chosen from areas of the site that are not being considered for part of a tarmac extension project to be conducted in the near future. Soils that will be covered with pavement will not pose a significant risk to human health or the environment, since the pavement will eliminate dust and minimize the potential for contaminants to leach into the groundwater.

The surface soil samples were generally made up of gravelly sand fill. No staining or odor was evident in the samples except for the one collected at location 13-SS-06. The soil at this location consisted of gravelly sand fill overlying dark gray-brown silty clay with red mottling and a faint burn odor.

Samples were collected from monitoring wells MW-037 and MW-038 during the 1994 field season. MW-039 was damaged beyond repair and samples could not be retrieved.

3.1.3 RI Conclusions

Data from soil and soil gas screening conducted at the CTDSA in 1993 indicate the presence of limited areas of elevated VOC and TPH concentrations. Laboratory confirmation of surface soil sampling conducted at this site in 1995 indicated the presence of DRO, possibly from motor oil, in excess of the screening criteria. However, no staining or odor was noted at the sampling locations where the detections occurred, and the majority of the soil samples contained little or no detectable DRO. These data are consistent with minor surface soil contamination from small leaks and spills. The Bureau of Land Management (BLM) uses the eastern portion of the site to park aircraft and refueling trucks. Vehicle traffic may also occur at other parts of the site, and small aircraft may taxi through this area as well. Aircraft and vehicle traffic are likely to be sources of DRO at this site.

The Stage 1 RI documented the presence of TCE in groundwater samples from one of the downgradient wells (MW-038). A sample collected from this well in 1994 was found to contain TCE in excess of the 5 μg/L MCL. It appears that small leaks and spills from drum-handling activities at this site may have resulted in the presence of TCE in the groundwater.

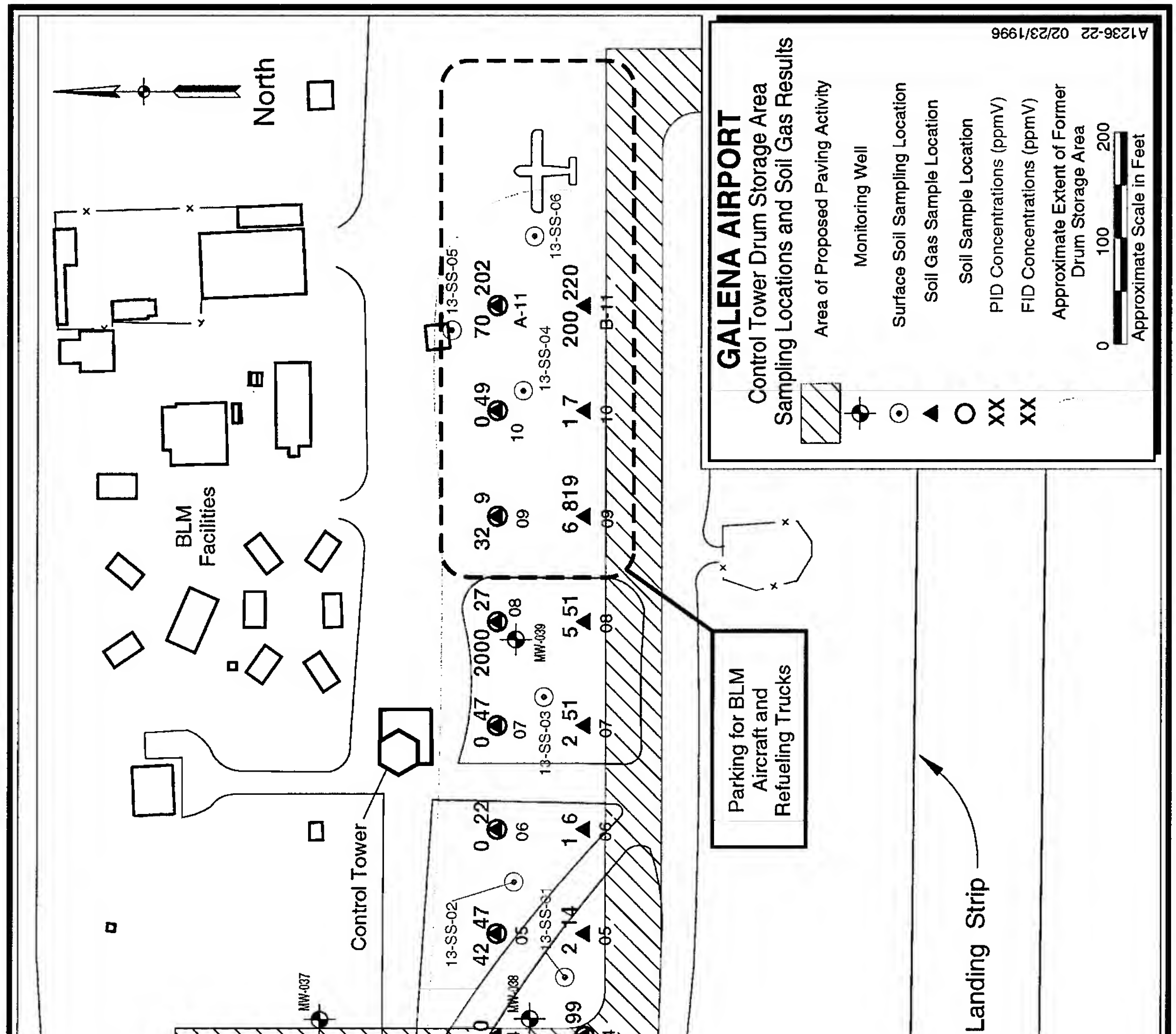


Figure 3-1. Sampling Locations and Soil Gas Survey Results for the Control Tower Drum Storage Area South (SS013)

3.2 Data Evaluation

Data available from the RI (USAF, 1995b) were used to evaluate human health risks and ecological effects posed by the CTDSA. Analytical results from a total of six surface soil samples and two groundwater samples made up the risk assessment data set. Table 3-1 lists the analytical methods used to test the soil and water samples during the 1994-1995 RI.

Statistical analyses, in accordance with methods summarized in Section 3 of Volume 1 and described in detail in Appendix A (Volume 2), were conducted on the available data to identify contaminants that were:

1. Positively detected in at least one sample in a given medium;

2. Detected at levels substantially greater than levels detected in associated blank samples (at least one result that exceeds the blanks UTL); and

3. Detected at levels elevated above naturally occurring background levels.

Table 3-2 lists the chemicals that were positively detected in the various media at the CTDSA. These chemicals were subjected to blanks and background comparisons and to additional screening and evaluation for the human health assessment and the ecological assessment before they were identified *positively* as COPCs for human health or COPECs. Appendix 4A of this volume lists all chemicals that were tested in the various media and indicates, on a medium-specific basis, whether or not there were measurable results after conducting the blanks evaluation and whether or not the average site-related concentration is greater than the average background concentration (metals only).

An evaluation of the adequacy of detection limits was performed by comparing the minimum detection limit for each chemical eliminated as a COPC because it was not detected in a medium with the USEPA Region III residential RBCs. Appendix 4B contains the results of this detection limit screening process. The uncertainties associated with detection limits that are not low enough to detect risk-based concentrations are summarized in Section 3.3.5.

3.3 Human Health Risk Assessment Results

The human health evaluation for the CTDSA included identification of COPCs (Section 3.3.1), exposure assessment (Section 3.3.2), toxicity assessment (Section 3.3.3), risk characterization (Section 3.3.4), and uncertainty assessment (Section 3.3.5). These tasks were performed according to the methods specified in Section 3 of Volume 1. Section 3.3.6 summarizes conclusions of the human health risk assessment for the CTDSA and recommendations for remedial action based on the risk assessment results.

3.3.1 Chemicals of Potential Concern

Additional screening of the chemicals was performed, in accordance with the methods described in Section 3 of Volume 1, to identify the COPCs carried through the human health assessment. The additional screening involved examining the frequency of detection, evaluating essential nutrients, and comparing maximum detected concentrations with USEPA Region III RBCs.

Frequency of Detection

At the CTDSA, there were no chemicals that were eliminated from the list of COPCs on the basis of a low (< 5%) frequency of detection.

Essential Nutrients

Essential nutrients that are often present either in the soil and water media were not detected at the CTDSA at concentrations elevated above background concentrations.

Risk-Based Screening

Maximum detected concentrations of numerous analytes were lower than one-tenth the media-specific USEPA Region III residential RBCs and were eliminated from the list of

Table 3-1
Analytical Methods Used at the Control Tower Drum Storage Area, South During the 1994-95 RI

Parameter	Soil [a]	Water [b]
Alkalinity - Total (SM403)	NA	2
Specific Conductance (E120.1)	NA	2
pH (E150.1 - aqueous, SW9045 - solids)	--	2
Total Dissolved Solids (E160.1)	NA	2
Total Suspended Solids (E160.2)	NA	2
Temperature (E170.1)	NA	2
Turbidity (E180.1)	NA	2
Anions (E300)	NA	2
Nitrate-Nitrite (E353.1)	NA	2
Metals - ICP Screen (SW6010)	6	2
Arsenic (SW7060)	6	2
Lead (SW7421)	6	2
Selenium (SW7740)	6	2
Organochlorine Pesticides and PCBs (SW8080)	6	2
Semivolatile Organic Compounds (SW8270)	6	2
Volatile Organic Compounds (SW8240)	6	NA
Volatile Organic Compounds (SW8260)	NA	2
Diesel Range Organics (AK102)	6	2
Gasoline Range Organics (AK101)	6	2
Soil Moisture Content (SW846)	6	NA

[a] Number of surface soil samples.
[b] Number of groundwater samples.
NA = Not applicable.
-- Analytical method not used for this medium.

Table 3-2
Analytes Detected at the Control Tower Drum Storage Area, South

Analyte	Analytical Method	Groundwater	Surface Soil
1,2-Dichloroethane	SW8260	D	--
2-Methylnaphthalene	SW8270	ND	D
4,4'-DDD	SW8080	ND	D
4,4'-DDE	SW8080	D	D
4,4'-DDT	SW8080	ND	D
Acetone	SW8260	D	--
Aldrin	SW8080	D	D
Aluminum	SW6010	D	D
Anthracene	SW8270	ND	D
Antimony	SW6010	D	D
Arsenic	SW7060	D	D
Barium	SW6010	D	D
Benzene	SW8260	D	--
Benzo(a)anthracene	SW8270	ND	D
Benzo(a)pyrene	SW8270	ND	D
Benzo(b)fluoranthene	SW8270	ND	D
Benzo(g,h,i)perylene	SW8270	ND	D
Benzo(k)fluoranthene	SW8270	ND	D
Beryllium	SW6010	D	D
Cadmium	SW6010	D	D
Calcium	SW6010	D	D
Chloromethane	SW8260	D	--
Chromium	SW6010	D	D
Chrysene	SW8270	ND	D
Cobalt	SW6010	D	D
Copper	SW6010	D	D
Dibromomethane	SW8260	D	--

Table 3-2
(Continued)

Analyte	Analytical Method	Groundwater	Surface Soil
Dieldrin	SW8080	D	D
Diesel Range Organics	AK102	D	D
Endosulfan I	SW8080	D	D
Endosulfan II	SW8080	ND	D
Endrin	SW8080	ND	D
Endrin aldehyde	SW8080	ND	D
Fluoranthene	SW8270	ND	D
Gasoline Range Organics	AK101	D	ND
Heptachlor	SW8080	D	D
Heptachlor epoxide	SW8080	D	D
Indeno(1,2,3-cd)pyrene	SW8270	ND	D
Iron	SW6010	D	D
Lead	SW7421	D	D
Magnesium	SW6010	D	D
Manganese	SW6010	D	D
Methylene chloride	SW8240	--	D
Methylene chloride	SW8260	D	--
Molybdenum	SW6010	D	D
Nickel	SW6010	D	D
Phenanthrene	SW8270	ND	D
Potassium	SW6010	D	D
Pyrene	SW8270	ND	D
Selenium	SW6010	D	NU
Selenium	SW7740	--	D
Silver	SW6010	D	D
Sodium	SW6010	D	D
Thallium	SW6010	D	D

Table 3-2
(Continued)

Analyte	Analytical Method	Groundwater	Surface Soil
Toluene	SW8260	D	--
Trichloroethene	SW8260	D	--
Vanadium	SW6010	D	D
Zinc	SW6010	D	D
alpha-BHC	SW8080	ND	D
beta-BHC	SW8080	D	ND
bis(2-Ethylhexyl)phthalate	SW8270	ND	D
cis-1,2-Dichloroethene	SW8260	D	--
delta-BHC	SW8080	ND	D
gamma-BHC(Lindane)	SW8080	D	D
m&p-Xylenes	SW8260	D	--
trans-1,2-Dichloroethene	SW8260	D	--

D = At least one numerical result was detected in samples.
ND = No numerical results were detected in samples.
-- = Not tested.
NU = Analytical method not used; more accurate method used instead.

COPCs. Appendix 4B of this volume contains the risk-based screening results.

COPC Summary

Tables 3-3 and 3-4 summarize conclusions for all chemicals that were positively detected in the surface soil and groundwater media, respectively, at the CTDSA. The tables indicate, for each analyte, whether sample concentrations were distinguishable from blank concentrations, whether concentrations were significantly different from background concentrations, whether the chemical was detected in at least 5% of the samples, and whether the chemical was eliminated as an essential nutrient or by the risk-based screen. Note that since 1993 and later sampling events reported uncensored data (where an ND is reported only if there is no instrument response), very low levels (greater than zero) of many analytes were reported in both blanks samples and site samples. Consequently, many chemicals that are not common field or laboratory contaminants were "detected" in blanks samples and were eliminated as COPCs on the basis of the blanks comparison. No analytes were detected in blanks at concentrations considered to represent a blanks contamination problem requiring corrective action as a result of the data validation process.

Table 3-5 lists the COPCs for the CTDSA. It includes all chemicals, by medium, with positive results that were greater than background and blank concentrations, that exceeded 5% detection frequency, and that were not eliminated as an essential nutrient or by risk-based screening.

Appendix A of the RI report (USAF, 1995b) provides a complete listing of analytical results from the RI. The appendix reports the sampling location, analytical result, any data qualifiers, and the sample detection limit.

Tables 3-6 and 3-7 provide a statistical summary of the values used in the risk assessment for human health COPCs in surface soil and groundwater, respectively. The tables list the detection frequency, maximum detected concentration, mean, standard deviation, and 95% UCL of the data.

3.3.2 Exposure Assessment

Human exposure to COPCs that are present at or migrating from the CTDSA was assessed in accordance with methods described in Section 3 of Volume 1.

Human Exposure Scenarios

Nine human exposure scenarios were addressed in the assessment of risks posed by the CTDSA:

Current Scenarios (also applicable as future scenarios)

1. Short-Term On-Base Resident (subchronic adult only);

2. Long-Term On-Base Resident (chronic adult and child);

3. Old Town Galena Resident (chronic adult and child);

4. New Town Galena Resident (chronic adult and child);

5. Short-Term On-Base Worker (subchronic adult only);

6. Long-Term On-Base Worker (chronic adult only);

7. Construction Worker (subchronic adult only);

Future Scenarios

8. Boarding School Student (subchronic/chronic); and

9. Old Town Galena Resident (chronic adult and child).

Table 3-3
Identification Criteria for Surface Soil COPCs at the Control Tower Drum Storage Area, South

Chemical	Blanks Comparison[a]	Background Comparison[b]	Low Frequency[c]	Essential Nutrient[d]	Risk-Based Screen[e]	COPC
2-Methylnaphthalene	-	-	-	-	-	YES[f]
4,4'-DDD	-	-	-	-	X	-
4,4'-DDE	-	-	-	-	X	-
4,4'-DDT	-	-	-	-	-	YES
Aldrin	-	-	-	-	-	YES
Anthracene	-	-	-	-	X	-
Benzo(a)anthracene	-	-	-	-	X	-
Benzo(a)pyrene	-	-	-	-	-	YES
Benzo(b)fluoranthene	-	-	-	-	YES	-
Benzo(g,h,i)perylene	-	-	-	-	-	YES[f]
Benzo(k)fluoranthene	-	-	-	-	X	-
Chrysene	-	-	-	-	X	-
Dieldrin	-	-	-	-	-	YES
Endosulfan I	-	-	-	-	X	-
Endosulfan II	-	-	-	-	X	-
Endrin	X	-	-	-	-	-
Endrin aldehyde	-	-	-	-	X	-
Fluoranthene	-	-	-	-	X	-
Heptachlor	-	-	-	-	X	-
Heptachlor epoxide	-	-	-	-	X	-
Indeno(1,2,3-cd)pyrene	-	-	-	-	X	-
Methylene chloride	X	-	-	-	-	-
Phenanthrene	-	-	-	-	-	YES[f]

Table 3-3
(Continued)

Chemical	Blanks Comparison[a]	Background Comparison[b]	Low Frequency[c]	Essential Nutrient[d]	Risk-Based Screen[e]	COPC
Pyrene	-	-	-	-	X	-
alpha-BHC	-	-	-	-	X	-
bis(2-Ethylhexyl)phthalate	-	-	-	-	X	-
delta-BHC	-	-	-	-	X	-
gamma-BHC	-	-	-	-	X	-
Aluminum	-	X	-	-	-	-
Antimony	-	-	-	-	-	YES
Arsenic	-	X	-	-	-	-
Barium	-	X	-	-	-	-
Beryllium	-	X	-	-	-	-
Cadmium	-	X	-	-	-	-
Calcium	-	X	-	-	-	-
Chromium	-	X	-	-	-	-
Cobalt	-	X	-	-	-	-
Copper	-	X	-	-	-	-
Iron	-	X	-	-	-	-
Lead	-	-	-	-	-	YES[f]
Magnesium	-	X	-	-	-	-
Manganese	-	X	-	-	-	-
Molybdenum	-	X	-	-	-	-
Nickel	-	X	-	-	-	-
Potassium	-	X	-	-	-	-
Selenium	-	X	-	-	-	-
Silver	-	X	-	-	-	-

Table 3-3
(Continued)

Chemical	Blanks Comparison[a]	Background Comparison[b]	Low Frequency[c]	Essential Nutrient[d]	Risk-Based Screen[e]	COPC
Sodium	-	X	-	-	-	-
Thallium	-	-	-	-	-	YES
Vanadium	-	X	-	-	-	-
Zinc	-	X	-	-	-	-

[a] Indistinguishable from blank concentrations.
[b] Not significantly elevated above background concentrations.
[c] Detected at a frequency less than 5%.
[d] Estimated maximum daily intake less than the RDA.
[e] Maximum detected concentration lower than one-tenth the USEPA Region III residential soil RBC.
[f] Toxicity value not available with which to perform risk-based screen.
\- Not eliminated through this criterion.

Table 3-4
Identification Criteria for Groundwater COPCs at the Control Tower Drum Storage Area, South

Chemical	Blanks Comparison[a]	Background Comparison[b]	Low Frequency[c]	Essential Nutrient[d]	Risk-Based Screen[e]	COPC
1,2-Dichloroethane	-	-	-	-	-	YES
4,4'-DDE	-	-	-	-	X	-
Acetone	X	-	-	-	-	-
Aldrin	-	-	-	-	-	YES
Benzene	X	-	-	-	-	-
Chloromethane	X	-	-	-	-	-
Dibromomethane	-	-	-	-		YES [f]
Dieldrin	-	-	-	-	-	YES
Endosulfan I	-	-	-	-	X	-
Heptachlor	-	-	-	-	-	YES
Heptachlor epoxide	-	-	-	-	-	YES
Methylene chloride	X	-	-	-	-	-
Toluene	X	-	-	-	-	-
Trichloroethene	-	-	-	-	-	YES
beta-BHC	-	-	-	-	-	YES
cis-1,2-Dichloroethene	-	-	-	-	-	YES
gamma-BHC	-	-	-	-	-	YES
m & p-Xylenes	-	-	-	-	X	-
trans-1,2-Dichloroethene	-	-	-	-	X	-
Aluminum	X	-	-	-	-	-
Antimony	X	-	-	-	-	-
Arsenic	X	-	-	-	-	-
Barium	-	X	-	-	-	-

Table 3-4
(Continued)

Chemical	Blanks Comparison[a]	Background Comparison[b]	Low Frequency[c]	Essential Nutrient[d]	Risk-Based Screen[e]	COPC
Beryllium	X	-	-	-	-	-
Cadmium	X	-	-	-	-	-
Calcium	-	X	-	-	-	-
Chromium	X	-	-	-	-	-
Cobalt	X	-	-	-	-	-
Copper	-	X	-	-	-	-
Iron	X	-	-	-	-	-
Lead	X	-	-	-	-	-
Magnesium	-	X	-	-	-	
Manganese	X	-	-	-	-	-
Molybdenum	X	-	-	-	-	-
Nickel	X	-	-	-	-	-
Potassium	-	X	-	-	-	-
Selenium	X	-	-	-	-	-
Silver	X	-	-	-	-	-
Sodium	-	X	-	-	-	-
Thallium	X	-	-	-	-	-
Vanadium	X	-	-	-	-	-
Zinc	X	-	-	-	-	-

[a] Indistinguishable from blank concentrations.
[b] Not significantly elevated above background concentrations.
[c] Detected at a frequency less than 5%.
[d] Estimated maximum daily intake less than the RDA.
[e] Maximum detected concentration lower than one-tenth the USEPA Region III tap water RBC.
[f] Toxicity value not available with which to perform risk-based screen.
\- Not eliminated through this criterion.

Table 3-5
Chemicals of Potential Concern at the Control Tower Drum Storage Area, South

Chemical	Media	
	Surface Soil	Groundwater
Metals		
Antimony	X	
Lead	X	
Thallium	X	
PNAs		
Benzo(a)pyrene	X	
Benzo(b)fluoranthene	X	
Benzo(g,h,i)perylene [a]	X	
2-Methylnaphthalene [a]	X	
Phenanthrene [a]	X	
Pesticides		
Aldrin	X	X
beta-BHC		X
gamma-BHC		X
4,4'-DDT	X	
Dieldrin	X	X
Heptachlor		X
Heptachlor epoxide		X
Volatiles		
Dibromomethane[a]		X
1,2-Dichloroethane		X
cis-1,2-Dichloroethene		X
Trichloroethene		X

[a] Retained as a COPC for qualitative evaluation only. Toxicity values are not available to perform risk quantification at this time.

Table 3-6
Statistical Summary of Values Used in the Human Health Risk Assessment for Surface Soil at the Control Tower Drum Storage Area, South

Chemical Name	Detection Frequency	Max Detect (mg/kg)	Mean (mg/kg)	Standard Deviation	95% UCL (mg/kg)
Metals					
Antimony	6/6	4.92E+01	2.94E+01	1.17E+01	**3.90E+01**
Lead [a]	6/6	**7.66E+01**	2.19E+01	2.70E+01	1.42E+02
Thallium	6/6	2.94E+01	1.50E+01	1.27E+01	**2.55E+01**
Pesticides					
Aldrin	2/6	**5.87E-03**	2.26E-03	2.51E-03	1.98E-02
4,4'-DDT	6/6	**4.96E-01**	1.47E-01	1.90E-01	1.27E+02
Dieldrin	5/6	1.16E-02	4.15E-03	4.56E-03	**7.90E-03**
PNAs					
Benzo(a)pyrene	1/6	**8.96E-02**	2.53E-02	3.09E-02	9.72E-02
Benzo(b)fluoranthene	1/6	**1.50E-01**	2.60E-02	5.75E-02	4.76E-01
Benzo(g,h,i)perylene [b]	1/6	**7.77E-02**	2.45E-02	2.65E-02	1.03E-01
2-Methylnaphthalene	2/6	2.31E-02	1/65E-02	7.94E-03	**2.30E-02**
Phenanthrene [b]	1/6	**1.27E-01**	2.58E-02	4.81E-02	6.30E-01

Bold numbers indicate the value used for the risk assessment, which was the lower of either the UCL or the maximum detected concentration.

[a] USEPA IEUBK model is used to calculate risk from lead.
[b] No toxicity data available.

Table 3-7
Statistical Summary of Values Used in the Human Health Risk Assessment for Groundwater at the Control Tower Drum Storage Area, South

Chemical Name	Detection Frequency	Max Detect (mg/L)	Mean (mg/L)	Standard Devia-tion	95% UCL (mg/L)
Pesticides					
Aldrin	1/2	**1.77E-05**	8.93E-06	1.24E-05	6.43E-05
beta-BHC	1/2	**7.10E-06**	3.61E-06	4.93E-06	2.56E-05
gamma-BHC	1/2	**1.33E-05**	7.39E-06	8.36E-06	4.47E-05
Dieldrin	1/2	**7.90E-06**	5.25E-06	3.75E-06	2.20E-05
Heptachlor	2/2	**3.30E-06**	1.85E-06	2.05E-06	1.10E-05
Heptachlor epoxide	2/2	**5.55E-05**	2.78E-05	3.92E-05	2.03E-04
Volatiles					
Dibromomethane [a]	1/2	**2.10E-04**	1.13E-04	1.37E-04	7.26E-04
1,2-Dichloroethane	1/2	**6.40E-03**	3.28E-04	4.42E-04	2.30E-02
cis-1,2-Dichloroethene	1/2	**2.33E-02**	1.17E-02	1.65E-02	8.51E-02
Trichloroethene	2/2	**9.28E-03**	4.81E-02	6.33E-03	3.31E-02

Bold numbers indicate the lower value used for the risk assessment, which was the lower of either the UCL or the maximum detected concentration.

[a] No toxicity data available.

These scenarios are described in Section 3 of Volume 1. Since possible exposures of the Old Town Galena resident might differ in the future if contaminants in the shallow groundwater migrate to the Old Town area, the future Old Town Galena resident is considered separately from the current Old Town Galena resident. The on-base worker scenarios assume that workers at the CTDSA are engaged in activities outdoors, every work day, for the duration of employment. However, employees in this area work in the control tower itself and do not frequent the grounds outside. Therefore, the worker scenarios better represent reasonable worst-case exposures that might occur at any time in the future, assuming industrial use of the land involving primarily outdoor work.

Exposure Pathways

Exposure pathways considered for applicability to each CTDSA exposure scenario included the following:

Soil Pathways

- Incidental ingestion of soil; and
- Dermal contact with soil.

Air Pathways

- Inhalation of fugitive dust; and
- Inhalation of vapors that volatilize from surface and subsurface media.

Groundwater Pathways

- Ingestion of drinking water;
- Dermal contact with water while showering;
- Inhalation of vapors that volatilize from water while showering; and
- Ingestion of plants irrigated or subirrigated with groundwater.

Surface Water Pathways

- Ingestion of fish from the Yukon River.

Groundwater pathways are applicable only if the results of groundwater modeling indicate that contaminants from the CTDSA might migrate to Old Town Galena. Surface water pathways are applicable only if the results of groundwater modeling indicate that toxicologically significant concentrations of contaminants originating from the CTDSA might reach the Yukon River.

Contaminants detected in the groundwater at the CTDSA were modeled to Old Town Galena and the shoreline of the Yukon River. Assuming a generally southwestern flow direction, most of Old Town Galena is not directly downgradient of the CTDSA. However, modeled concentrations at the closest downgradient receptor location in Old Town Galena provide a worst-case estimate of possible impacts on wells that could be located at the extreme western edge of town.

Concentrations of contaminants in the Yukon River within 5 ft of the shoreline were also estimated, assuming that mixing is limited to river flow within that 5 ft. This assumption was made because there is not instant dilution of contaminants entering the river in the groundwater by the entire volume of river flow that passes by Galena. Rather, a plume would follow the shoreline downstream.

Table 3-8 summarizes the modeled Old Town Galena and river concentrations for the COPCs in groundwater at the CTDSA. It also lists applicable chemical-specific fish BCFs and estimated concentrations in fish exposed to river water within 5 ft of the shoreline. Finally, the table lists the USEPA Region III RBCs for tap water and fish. The estimated fish concentrations are all below the Region III RBCs for fish. The surface water pathways are therefore not quantified for the CTDSA. The modeled Old Town Galena concentrations, considered the

Table 3-8
Comparisons of Control Tower Drum Storage Area Groundwater Modeling Results with USEPA Region III Risk-Based Concentrations (RBCs)

Chemical	Modeled Old Town Galena Concentration (ug/L)	Modeled River Concentration [a] (ug/L)	Fish BCF [b]	Estimated Concentration in Fish [c]	USEPA Region III RBC [d]	
					Tap water (ug/L)	Fish (mg/kg)
1,2-Dichloroethane	1.65E-03	2.76E-07	2	5.5E-10	1.2E-01	3.5E-02
Aldrin	4.59E-04 [e]	3.06E-10	3140	9.6E-10	4.0E-03	1.9E-04
beta-BHC	4.18E-06	3.40E-10	1460	4.96E-10	3.7E-02	1.8E-03
cis-1,2-Dichloroethene	1.65E+00	1.24E-06	23	2.9E-08	6.1E+01	1.4E+01
Dibromomethane	8.67E-12	1.39E-11	5	6.95E-14	NV	NV
Dieldrin	8.09E-28	2.77E-10	2700	7.5E-10	4.2E-03	2.0E-04
gamma-BHC	6.59E-06	3.11E-10	319	9.9E-11	5.2E-02	2.4E-03
Heptachlor	2.07E-99	2.21E-47	20	4.4E-49	2.3E-03	7.0E-04
Heptachlor epoxide	1.34E-03 [e]	1.21E-09	20	2.4E-11	1.2E-03	3.5E-04
Trichloroethene	3.20E-01 [e]	2.57E-07	17	4.4E-09	1.6E+00	2.9E-01

[a] Estimated concentration in Yukon River within 5 ft of shoreline, assuming mixing is limited to river flow within that 5 ft.
[b] Fish bioconcentration factor. See Appendix J (Ecological Assessment Toxicity Profiles) of Volume 3 and Appendix 4L of this addendum..
[c] Concentration in water (ug/L) x 1 L/kg x 1 mg/1000 ug x BCF (unitless).
[d] U.S. Environmental Protection Agency (USEPA) Region III, Risk-Based Concentration Table, January-June 1995, March 7, 1995.
[e] Modeled concentration exceeds one-tenth the Region III tap water RBC. This chemical is included in the groundwater pathway calculations.
NV = No value
NOTE: Shaded values exceed Region III RBC for tap water or fish.

worst-case possible impact on any well located at the western edge of Old Town Galena, are all below the respective Region III tap water RBCs, except for heptachlor epoxide, which only slightly exceeds the tap water RBC. However, since modeled concentrations at Old Town Galena of three chemicals (aldrin, heptachlor epoxide, and TCE) exceed one-tenth the tap water RBC, the groundwater pathways are quantified for the Old Town Galena resident for this site. Since there is no evidence that a groundwater contaminant plume extends from the site to New Town Galena, the groundwater-related exposure pathways are considered possible future exposures and are quantified for the future Old Town Galena resident scenario only.

Appendix C (Volume 3) describes the groundwater modeling methodology. Likewise, Appendix D (Volume 3) describes the emissions estimating and air dispersion modeling methodologies. These methodologies are not repeated in this addendum. Groundwater modeling results for this site are documented in Appendix 4C of this volume. Appendix 4D of this volume contains dispersion modeling results for this site. Appendices 4E and 4F of this volume describe the methodologies used to model uptake by fruits and vegetables and air concentrations inside a shower stall, respectively, and provide modeling results.

Conceptual Site Model

A conceptual site model presents the current understanding of possible sources of contamination and the likely mechanisms for movement of contamination within and beyond site boundaries. Figure 3-20 is a conceptual site model flow diagram showing the primary sources of contamination at the CTDSA, their migration pathways, exposure media, and exposure routes that may lead to human exposure. The figure effectively summarizes the results of the human health exposure assessment. It illustrates complete exposure pathways for the exposure scenarios that are evaluated and indicates which pathways are quantified for each scenario. It also notes which pathways are possibly complete but probably not significant. These pathways are not quantified.

Quantification of Exposure

Table 3-9 provides a matrix of exposure scenarios and soil-related exposure pathways that are applicable to the CTDSA and specifies the exposure points and data that were used to derive concentrations in the exposure media at this site. Table 3-10 provides the same information for groundwater-related pathways. Appendix 4G of this volume summarizes the human health exposure point concentrations used to quantify exposure.

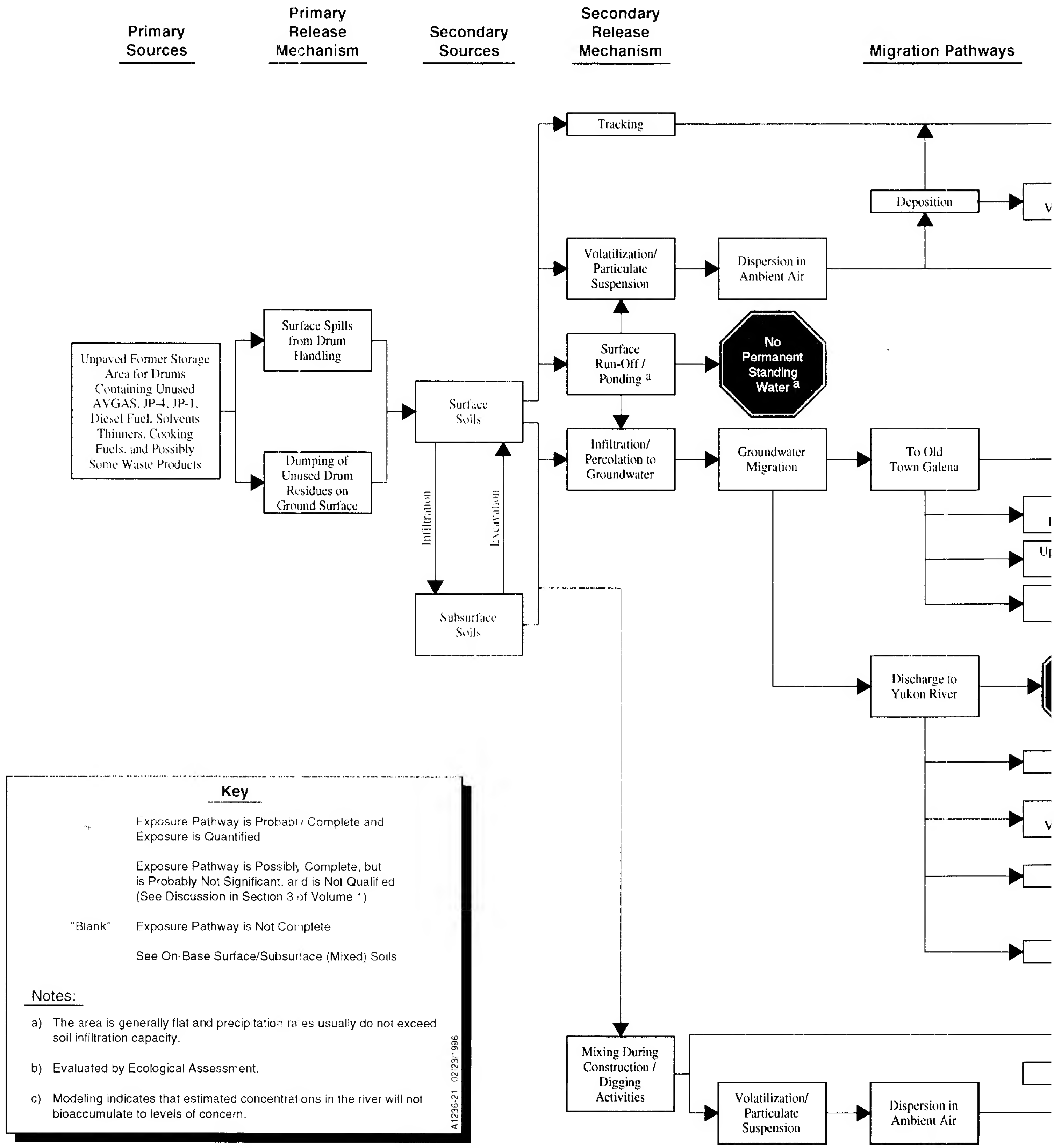
Section 3 of Volume 1 describes the methods used to quantify exposure. Human health intake equations and exposure parameters are documented in Appendix 4H of this volume. Intakes were quantified separately for evaluation of carcinogenic and noncarcinogenic effects. Daily intakes for analysis of carcinogenic effects are averaged over a 70-year lifetime. Daily intakes for analysis of noncarcinogenic effects are averaged over the exposure duration only.

3.3.3 Toxicity Assessment

Table 2-11 presents the toxicity values used in the human health risk assessment for COPCs at the CTDSA. Most of the toxicity values in this table were obtained from IRIS searches conducted in October 1995 or from HEAST (USEPA, 1994b). Carcinogenic values for some PNAs were calculated using methodologies in provisional guidance for calculating potential potency based on values for benzo(a)pyrene (USEPA, 1993). Although the oral slope factor for benzo(a)pyrene is listed in IRIS, the inhalation slope factor has been withdrawn from IRIS and HEAST. Since there is no inhalation unit risk for benzo(a)pyrene, the USEPA guidance directs that the potential potency values should be applied only to assessment of carcinogenic hazard from oral exposure to PNAs (USEPA, 1993).

The inhalation RfD for 1,2-dichloroethane and the inhalation slope factor for

Figure 3-2. Human Exposure Conceptual Model for the



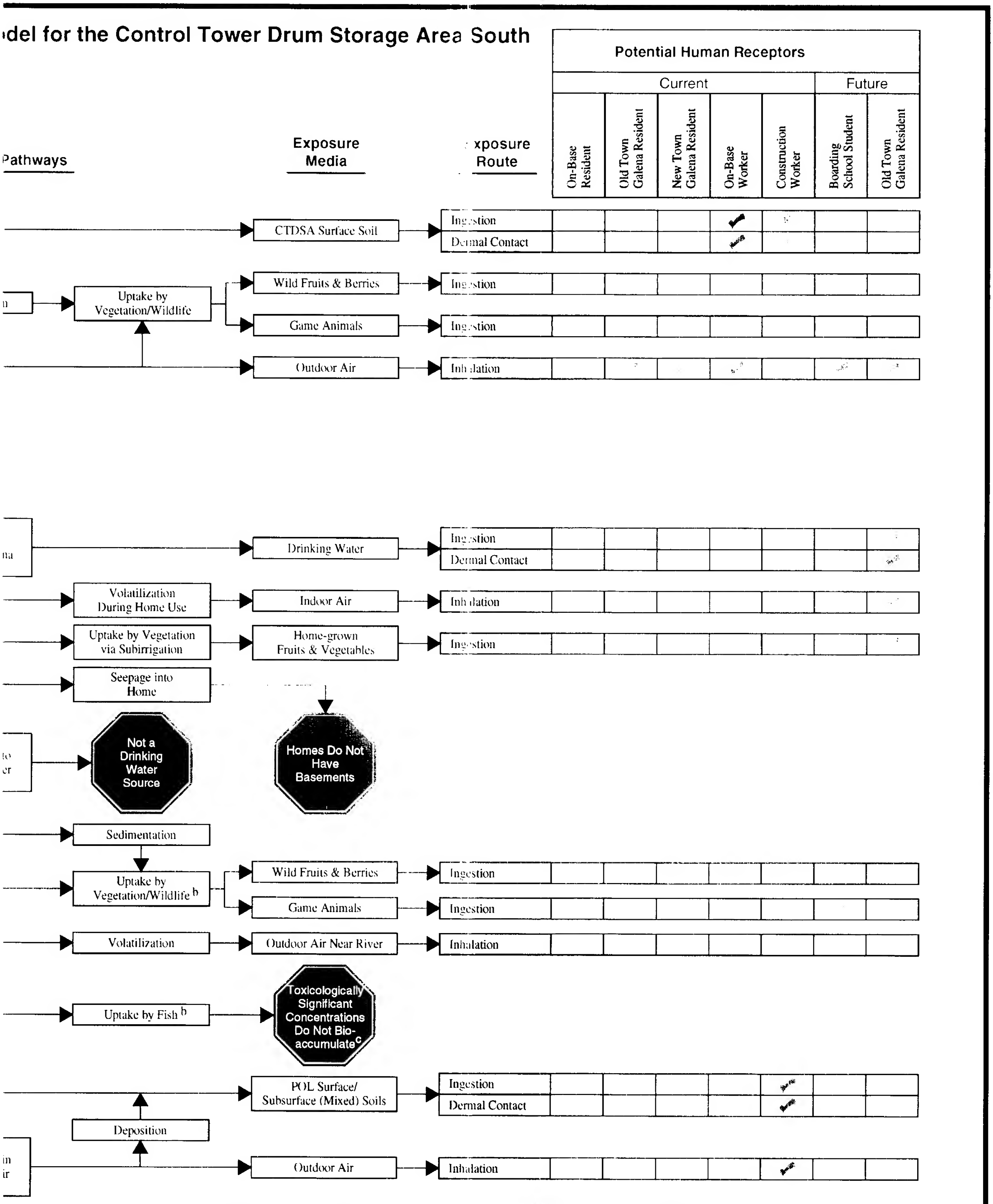


Figure 3-2. Human Exposure Conceptual Model for the Control Tower Drum Storage Area South

Table 3-9
Data Used to Derive Exposure Concentrations in Soil-Related Exposure Media at the Control Tower Drum Storage Area, South

Exposure Scenario	Exposure Pathways: Ingestion of Soil	Exposure Pathways: Dermal Contact with Soil	Exposure Pathways: Inhalation of Vapor Phase Chemicals and Fugitive Dust in Ambient Air
Current Scenarios			
On-Base Residents -Short Term -Long Term	NA	NA	Modeled concentration of vapor-phase chemicals (D) and wind-blown dust (E) at closest downwind on-base residential receptor.
Galena Residents -Old Town -New Town	NA	NA	Modeled concentration of vapor-phase chemicals (D) and wind-blown dust (E) at closest downwind Old Town Galena residential receptor. Modeled concentration of vapor-phase chemicals (D) and wind-blown dust (E) at closest downwind New Town Galena residential receptor.
On-Base Workers -Short Term	Surface Soil (A)	Surface Soil (A)	Modeled concentration of vapor-phase chemicals (D) and wind-blown dust (E) directly above the CTDSA site.
-Long Term	Surface Soil (A)	Surface Soil (A)	Modeled concentration of vapor-phase chemicals (D) and wind-blown dust (E) directly above the CTDSA site.
-Construction	Mixed Soil (C)	Mixed Soil(C)	Modeled concentration of vapor-phase chemicals (F) and dust generated by construction activity (G) directly above the CTDSA site.
Future Scenarios			
Boarding School Student	NA	NA	Modeled concentration of vapor-phase chemicals (D) and wind-blown dust (E) at the location of the proposed student dormitory.
Galena Residents -Old Town	NA	NA	Modeled concentration of vapor-phase chemicals (D) and wind-blown dust (E) at closest downwind Old Town Galena residential receptor.

Table 3-9
(Continued)

<u>Exposure Media</u>

Remedial Investigation Data:
(A) Measured concentrations in surface soils, represented by the 95% UCL, or the maximum detected concentration if lower, in soils within 2 ft of the ground surface at the CTDSA.
(B) Measured concentrations in subsurface soils, represented by the 95% UCL, or the maximum detected concentration if lower, in soils greater than 2 ft below the ground surface at the CTDSA.
(C) Mixed surface and subsurface soil, represented by the highest of either the surface soil concentration (A) or the subsurface soil concentration (B).

Transport and Fate Modeling:
(D) Estimated concentration of vapor-phase chemicals in ambient air based on emissions from surface soil (A) and subsurface soil (B) and dispersion modeling to specific receptor locations.
(E) Estimated concentration of wind-blown dust based on particulate emissions from surface soil (A) and dispersion modeling to specific receptor locations.
(F) Estimated concentration of vapor-phase chemicals in ambient air assuming subsurface soil is brought to the surface by construction activities, based on emissions from mixed soils (C) and dispersion modeling to specific receptor locations.
(G) Estimated concentration of dust generated by construction activities directly above the site, based on particulate emissions from mixed soil (C) and dispersion modeling to specific receptor locations.

NA = Not Applicable

Table 3-10
Data Used to Derive Exposure Concentrations in Groundwater-Related Exposure Media at the Control Tower Drum Storage Area, South

Exposure Scenario	Exposure Pathways			
	Ingestion of Groundwater	Dermal Contact with Groundwater	Inhalation of Vapor Phase Chemicals in Shower Stall	Ingestion of Fruits and Vegetables Irrigated or Subirrigated with Groundwater
Current Scenarios				
On-Base Residents -Short Term -Long Term	NA	NA	NA	NA
Galena Residents -Old Town -New Town	 NA NA	 NA NA	 NA NA	 NA NA
On-Base Workers -Short Term -Long Term -Construction	NA	NA	NA	NA
Future Scenarios				
Boarding School Student	NA	NA	NA	NA
Galena Resident -Old Town	Modeled concentrations in groundwater (B) at closest downgradient receptor in Old Town Galena.	Modeled concentrations in groundwater (B) at closest downgradient receptor in Old Town Galena.	Modeled concentrations of vapor phase chemicals (C) in the air of a shower stall.	Modeled concentrations in fruits and vegetables (D) grown in gardens located in Old Town Galena.

<u>Exposure Media</u>

Remedial Investigation Data:
(A) Measured concentrations in shallow groundwater at the CTDSA site represented by the 95% UCL, or the maximum detected concentration if lower, in groundwater at the two wells located at the CTDSA.

Transport and Fate Modeling:
(B) Estimated concentrations in shallow groundwater at Old Town Galena based on measured concentrations in the groundwater at the CTDSA site (A) and modeling to the closest downgradient location in Old Town Galena.
(C) Estimated concentrations of vapor-phase chemicals in the air of a shower stall, assuming use of shallow groundwater (B) as tap water.
(D) Estimated concentrations in fruits and vegetables grown in home gardens in Old Town Galena, assuming that groundwater (B) provides the sole source of water for the plants, either through irrigation or subirrigation.

NA = Not applicable.

TCE are provisional values recommended by the Superfund Health Risk Technical Support Center (footnoted EPA-ECAO in the USEPA Region III RBC table, USEPA, 1995b). The provisional RfD and slope factor were converted to an RfC and inhalation unit risk value for use in the risk calculations. The oral slope factor for TCE has been withdrawn from IRIS and HEAST, but is used to evaluate oral exposures to this chemical because no other value is available.

Toxicity values were not available for four COPCs at the CTDSA. These include lead, benzo(g,h,i)perylene, 2-methylnaphthalene, and phenanthrene. Lead was initially screened using the USEPA-recommended screening level (400 mg/kg) for lead in soil for residential land use (USEPA, 1994d) and the drinking water action level for lead (USEPA, 1994a), and if necessary, evaluated using the USEPA IEUBK model for lead in children (USEPA, 1994b). Available health effects information for these COPCs is included in Appendix G (Volume 3), and the impact of the lack of toxicity values for these COPCs is discussed as an uncertainty in Section 3.3.5.

Dermal toxicity values are not listed in Table 3-11. Because of the high level of uncertainty associated with adjusting oral toxicity values (which are generally based on administered dose) to evaluate dermal exposure (which is calculated as an absorbed dose), unadjusted oral values were used to quantify dermal pathway risks. Dermal absorption factors used to quantify dermal exposures are listed in Table 3-11. Default values of 1% for inorganic analytes and 10% for organic analytes were used. PNAs were not evaluated for dermal exposure (see discussion in Section 3.1.4 of Volume 1).

Appendix G of Volume 1 contains toxicological profiles for all of the human health COPCs at the CTDSA, except antimony. Appendix 4I of this volume contains a toxicological profile for antimony.

3.3.4 Risk Characterization

Carcinogenic risk and noncancer HIs were estimated for each exposure scenario according to procedures outlined in Section 3 of Volume 1. The carcinogenic risk and noncarcinogenic risk estimates are presented in Appendix 4J of this volume.

Carcinogenic Effects

For each potentially carcinogenic COPC, the incremental probability that an individual will develop cancer over a lifetime was estimated from projected intake levels and the cancer slope factor or the inhalation unit risk. The USEPA Superfund site remediation goal set forth in the NCP designates a cancer risk of 10^{-4} (1 in 10,000) to 10^{-6} (1 in one million). This range is designed to be protective of human health and to provide flexibility for consideration of other factors in risk management decisions. A cancer risk of 1 in one million is considered the *de minimis*, or a level of negligible risk, for risk management decisions. A cancer risk higher than 1 in one million is not necessarily considered unacceptable. The State of Alaska plans to use a cancer risk level of 10^{-5} (1 in 100,000) in making risk management decisions (USAF, 1996b).

Table 3-12 summarizes the cancer risk estimates for each exposure scenario at the CTDSA. Estimated incremental cancer risks for all scenarios are below 1 in one million. Estimated risks lower than 1 in one million are considered "negligible" and do not warrant remedial action.

Risk summary tables for each exposure scenario are provided in Appendix 4J of this volume. The tables detail the cancer risk estimates for each applicable chemical and exposure pathway and show the percent contribution of each chemical and pathway to the total estimated risk.

Noncarcinogenic Effects

To characterize the potential noncancer effects of chemicals, comparisons were made

Table 3-11
Toxicity Values for Control Tower Drum Storage Area, South COPCs

COPCs	EPA Class	Chronic						Subchronic		Dermal Absorption Factor (unitless) ABS [a]
		Oral RfD (mg/kg/day)	Inhal RfD (mg/kg/day)	Inhal RfC (mg/m³)	Oral SF 1/(mg/kg/day)	Inhal SF 1/(mg/kg/day)	Inhal Unit Risk 1(μg/m³)	Oral RfD (mg/kg/day)	Inhal RfC (μg/m³)	
Metals										
Antimony	--	4E-04 [c]	--	--	--	--	--	4E-04 [e]	--	0.01
Lead [b]	B2 [c]	--	--	--	--	--	--	--	--	--
Thallium (sulfate)	D	8E-05 [c]	--	--	--	--	--	--	--	0.01
PNAs										
2-Methylnaphthalene	--	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene	B2 [c]	--	--	--	7.3E+00 [c]	--	--	--	--	--
Benzo(b)fluoranthene	B2 [c]	--	--	--	7.3E-01 [d]	--	--	--	--	--
Benzo(g,h,i)perylene	D [c]	--	--	--	--	--	--	--	--	--
Phenanthrene	D [c]	--	--	--	--	--	--	--	--	--
Pesticides										
4,4'-DDT	B2 [c]	5E-04 [c]	--	--	3.4E-01 [c]	3.4E-01 [e]	9.7E-05 [c]	5E-04 [e]	--	1E-01
Aldrin	B2 [c]	3E-05 [c]	--	--	1.7E+01 [c]	1.7E+01 [e]	4.9E-03 [c]	3E-05 [e]	--	1E-01
beta-BHC	C [c]	--	--	--	1.8E+00 [c]	1.8E+00 [e]	5.3E-04 [c]	--	--	1E-01
Dieldrin	B2 [c]	5E-05 [c]	--	--	1.6E+01 [c]	1.6E+01 [e]	4.6E-03 [c]	5E-05 [e]	--	1E-01
gamma-BHC	B2/C [e]	3E-04 [c]	--	--	1.3E+00 [e]	--	--	3E-03 [e]	--	1E-01
Heptachlor	B2 [c]	5E-04 [c]	--	--	4.5E+00 [c]	4.5E+00 [e]	1.3E-03 [c]	5E-04 [e]	--	1E-01
Heptachlor epoxide	B2 [c]	1.3E-05 [c]	--	--	9.1E+00 [c]	9.1E+00 [e]	2.6E-03 [c]	1.3E-05 [e]	--	1E-01
Volatiles										
1,2-Dichloroethane	B2 [c]	--	2.86E-03 [f]	1E-02 [g]	9.1E-02 [c]	9.1E-02 [e]	2.6E-05 [c]	--	--	1E-01
cis-1,2-Dichloroethene	D [c]	1E-02 [e]	--	--	--	--	--	1E-01 [e]	--	1E-01
Dibromomethane	--	--	--	--	--	--	--	--	--	1E-01
Trichloroethene	--	6E-03 [f]	--	--	1.1E-02 [h]	6E-03 [f]	1.7E-06 [g]	--	--	1E-01

[a] Absorption factor of 1% was used for inorganic analytes and an absorption factor of 10% was used for organic analytes. PNAs are not evaluated for dermal exposures (see discussion in Section 3.1.4 of Volume 1).
[b] Risk from exposure to lead was evaluated using the USEPA IEUBK model.
[c] USEPA, 1995. Integrated Risk Information System (IRIS). Database search, October 20, 1995.
[d] PNA toxicity values were derived using the *Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons* (EPA/600/R-93/089) dated July 1993.
[e] USEPA, 1994c. Health Effects Assessment Summary Tables (HEAST) Annual Update, FY 1994. EPA 540-R-020, March 1994.
[f] Value was taken from Region III RBC table dated 1/31/95. The table states that this is a provisional value from EPA-ECAO Regional Support.
[g] Value was calculated using the appropriate inhalation reference dose or inhalation slope factor with 20-m³ breathing rate and 70-kg adult body weight.
[h] These values were withdrawn from both IRIS and HEAST. However, Region III recommends using these values in deriving RBCs and they are presented in the Region III RBC table dated 1/31/95.

Table 3-12
Summary of Carcinogenic Risks[a] by Exposure Scenario for the Control Tower Drum Storage Area, South

Scenario	Child		Adult	
	Average	Reasonable Maximum	Average	Reasonable Maximum
Current Scenarios				
Short-Term On-Base Resident	NA	NA	8E-13	9E-13
Long-Term On-Base Resident	8E-13	1E-12	1E-12	4E-12
Old Town Galena Resident	1E-12	2E-12	5E-12	2E-11
New Town Galena Resident	5E-14	6E-14	2E-13	8E-13
Short-Term On-Base Worker	NA	NA	3E-08	1E-07
Long-Term On-Base Worker	NA	NA	4E-07	5E-07
On-Base Construction Worker	NA	NA	7E-09	6E-08
Future Scenarios				
Boarding School Student [b]	4E-13	2E-12	NA	NA
Old Town Galena Resident	1E-07	2E-07	2E-07	8E-07

NOTE: risk estimates printed in bold type equal or exceed the Superfund site remediation threshold of 10^{-6} (1 in one million) for carcinogens.

[a]Carcinogenic risk is expressed as a unitless probability of an individual developing cancer.
[b]Age 15-18 (Grades 9-12) for the average case and age 6-19 (Grades 1-12, plus two repeat years) for the reasonable maximum case.
NA = Not Applicable

between projected intakes of COPCs over a specified time and toxicity values, primarily oral RfDs and inhalation RfCs. An HQ, which is the ratio between exposure to a chemical and that chemical's toxicity value, was calculated for each noncarcinogenic COPC and exposure pathway. Chemical-specific HQs were then summed for each COPC and each pathway of exposure to calculate the total HI.

The HI is not a statistical probability of a systemic effect occurring. If the exposure level exceeds the appropriate toxicity value (i.e., the HQ is greater than one), there may be cause for concern. The Superfund site remediation goal for noncarcinogens is a total HI of 1 for chemicals with similar toxic endpoints.

Table 3-13 summarizes the noncancer hazard estimates for each exposure scenario. The HIs for the residents and boarding students (except the future Old Town Galena resident) are 0 because none of the COPCs in soils are known to have systemic effects by the inhalation route and inhalation RfCs are not available. Inhalation of dust and vapors from the soils is the only applicable pathway of exposure for these scenarios. The HIs for all scenarios are below the Superfund site remediation goal of 1 for noncarcinogens, indicating that there is little cause for concern about noncarcinogenic effects.

Noncancer risk summary tables for each exposure scenario are provided in Appendix 4J of this volume. The tables detail the noncancer hazard estimates for each applicable chemical and exposure pathway and show the percent contribution of each chemical and pathway to the total estimated HI.

Effects of Exposure to Lead

The maximum detected concentration of lead at the CTDSA is 77 mg/kg in the surface soil. Lead is not a COPC in groundwater. The maximum soil concentration is well below the 400 mg/kg recommended screening level for lead in residential soil (USEPA, 1994d), which was derived using the IEUBK lead model (USEPA, 1994b). Since the soil concentrations are well below the soil screening level, lead was not evaluated further.

Major Factors Driving Estimated Risks

Tables 3-14 and 3-15 present a risk characterization summary for carcinogenic risk estimates and noncarcinogenic hazard estimates, respectively. For each scenario the tables specify the exposure pathways that were quantified, the estimated risks for each case, the chemicals and pathways that are major contributors to the estimated risks, and the primary uncertainties associated with the estimates. At the CTDSA, there are no chemicals or pathways that contribute a cancer risk greater than 1 in one million or an HI greater than 1.

3.3.5 Uncertainty Assessment

The risk characterization results are not fully probabilistic estimates of risk but rather conditional estimates of risk that should be interpreted in light of the considerable number of assumptions required to quantify exposure, intake, and dose-response. Uncertainties associated with identification of COPCs, the exposure assessment, and the toxicity assessment all contribute to the level of confidence that can be placed in the risk characterization results.

In general, risk assessment uncertainty was addressed in the BRA by the following:

1. Incorporating both average and reasonable maximum values for input parameters, whenever possible, to provide a range of results rather than a single value;

2. Erring on the side of conservatism when defining the reasonable maximum case; and

3. Identifying and discussing the major sources of uncertainty and their effect on the risk estimates so that the results can be properly interpreted.

Table 3-13
Summary of Noncarcinogenic Hazard Indices[a] by Exposure Scenario for the Control Tower Drum Storage Area, South

Scenario	Child		Adult	
	Average	Reasonable Maximum	Average	Reasonable Maximum
Current Scenarios				
Short-Term On-Base Resident	NA	NA	0 [c]	0 [c]
Long-Term On-Base Resident	0 [c]	0 [c]	0 [c]	0 [c]
Old Town Galena Resident	0 [c]	0 [c]	0 [c]	0 [c]
New Town Galena Resident	0 [c]	0 [c]	0 [c]	0 [c]
Short-Term On-Base Worker	NA	NA	0.05	0.06
Long-Term On-Base Worker	NA	NA	0.09	0.09
On-Base Construction Worker	NA	NA	0.08	0.5
Future Scenarios				
Boarding School Student[b]	0 [c]	0 [c]	NA	NA
Old Town Galena Resident	0.01	0.02	0.003	0.006

NOTE: Hazard indices printed in bold type equal or exceed the Superfund site remediation goal of 1 for noncarcinogens.

[a]Noncarcinogenic hazard is not expressed as a probability of an adverse effect but rather a comparison between exposure and a reference dose (hazard index).
[b]Age 15-18 (Grades 9-12) for the average case and age 6-19 (Grades 1-12, plus two repeat years) for the reasonable maximum case.
[c]Noncancer hazard indices are 0 because none of the COPCs in soils are known to have adverse effects by the inhalation route. The only applicable pathway of exposure is inhalation of vapors and dust.
NA = Not Applicable

Table 3-14
Risk Characterization Summary for the CTDSA: Carcinogenic Risks

Scenario	Pathways Quantified	Case	Estimated Total Cancer Risk [a]		Chemicals and Pathways that Contribute to a Chemical- and Pathway- Specific Cancer Risk Greater than 1 in One Million [b]	Primary Site-Specific Uncertainties
			Average	Reasonable Maximum		
Current Scenarios						
Short-Term On-Base Resident (subchronic)	1. Inhalation of vapors and dust	Adult	8E-13	9E-13	None	Applicability of cancer risk estimation methodology to subchronic exposure durations.
Long-Term On-Base Resident (chronic)	1. Inhalation of vapors and dust	Child Adult	8E-13 1E-12	1E-12 4E-12	None	Duration of residence.
Old Town Galena Resident (chronic)	1. Inhalation of vapors and dust	Child Adult	1E-12 5E-12	2E-12 2E-11	None	Risk from accessing the site was not quantified.
New Town Galena Resident (chronic)	1. Inhalation of vapors and dust	Child Adult	5E-14 2E-13	6E-14 8E-13	None	Risk from accessing the site was not quantified.
Short-Term On-Base Worker (subchronic)	1. Inhalation of vapors and dust 2. Incidental ingestion of soil 3. Dermal contact with soil	Adult	3E-08	1E-07	None	Likelihood of outdoor workers at the CTDSA. Nature and duration of work activities at the CTDSA. Applicability of cancer risk estimation methodology to subchronic exposure durations. Lack of dermal toxicity values for PNAs.
Long-Term On-Base Worker (chronic)	1. Inhalation of vapors and dust 2. Incidental ingestion of soil 3. Dermal contact with soil	Adult	4E-07	5E-07	None	Likelihood of outdoor workers at the CTDSA. Nature and duration of work activities at the CTDSA. Lack of dermal toxicity values for PNAs.
On-Base Construction Worker (subchronic)	1. Inhalation of vapors and dust 2. Incidental ingestion of soil 3. Dermal contact with soil	Adult	7E-09	6E-08	None	Likelihood of construction activity at the CTDSA. Duration of construction activity. Applicability of cancer risk estimation methodology to subchronic exposure durations. Lack of dermal toxicity values for PNAs.

Table 3-14
(Continued)

Scenario	Pathways Quantified	Case	Estimated Total Cancer Risk [a]		Chemicals and Pathways that Contribute to a Chemical- and Pathway- Specific Cancer Risk Greater than 1 in One Million [b]	Primary Site-Specific Uncertainties
			Average	Reasonable Maximum		
Future Scenarios						
Boarding School Student (subchronic/ chronic)	1. Inhalation of vapors and dust	Student	4E-13	2E-12	None	Extension of facility from Grades 9-12 to Grades 1-12. Risk from accessing the site was not quantified.
Old Town Galena Resident (chronic)	1. Inhalation of vapors and dust 2. Ingestion of groundwater 3. Dermal contact with groundwater 4. Inhalation of vapors while showering 5. Ingestion of fruits and vegetables irrigated or subirrigated with groundwater	Child Adult	1E-07 2E-07	2E-07 8E-07	None	Use of shallow groundwater as drinking water. Estimated concentrations in groundwater at Old Town Galena are the result of conservative groundwater modeling. Estimated concentrations in air of shower stall and in fruits and vegetables are also the result of modeling exercises. Risk from accessing the site was not quantified.

[a]Estimated cancer risks printed in bold type equal or exceed the Superfund site remediation threshold of 1E-06 (1 in one million).
[b]Applicable only if the total cancer risk exceeds 1 in one million (estimated risk printed in bold type in column titled "Estimated Total Cancer Risk").

Table 3-15
Risk Characterization Summary for the CTDSA: Noncarcinogenic Risks

Scenario	Pathways Quantified	Case	Estimated Total Hazard Index [a]		Chemicals and Pathways that Contribute a Chemical- and Pathway-Specific Noncancer Hazard Quotient Greater than 1 [b]	Primary Site-Specific Uncertainties
			Average	Reasonable Maximum		
Current Scenarios						
Short-Term On-Base Resident (subchronic)	1. Inhalation of vapors and dust	Adult	0	0	None	Lack of subchronic inhalation toxicity values for COPCs.
Long-Term On-Base Resident (chronic)	1. Inhalation of vapors and dust	Child Adult	0 0	0 0	None	Duration of residence. Lack of chronic inhalation toxicity values for COPCs.
Old Town Galena Resident (chronic)	1. Inhalation of vapors and dust	Child Adult	0 0	0 0	None	Risk from accessing the site was not quantified. Lack of chronic inhalation toxicity values for COPCs.
New Town Galena Resident (chronic)	1. Inhalation of vapors and dust	Child Adult	0 0	0 0	None	Risk from accessing the site was not quantified. Lack of chronic inhalation toxicity values for COPCs.
Short-Term On-Base Worker (subchronic)	1. Inhalation of vapors and dust 2. Incidental ingestion of soil 3. Dermal contact with soil	Adult	0.05	0.06	None	Likelihood of outdoor workers at the CTDSA. Nature and duration of work activities at the CTDSA. Lack of subchronic inhalation toxicity values for COPCs.
Long-Term On-Base Worker (chronic)	1. Inhalation of vapors and dust 2. Incidental ingestion of soil 3. Dermal contact with soil	Adult	0.09	0.09	None	Likelihood of outdoor workers at the CTDSA. Nature and duration of work activities at the CTDSA. Lack of chronic inhalation toxicity values for COPCs.
On-Base Construction Worker (subchronic)	1. Inhalation of vapors and dust 2. Incidental ingestion of soil 3. Dermal contact with soil	Adult	0.08	0.5	None	Likelihood of construction activity at the CTDSA. Duration of construction activity. Lack of subchronic inhalation toxicity values for COPCs.

**Table 3-15
(Continued)**

Scenario	Pathways Quantified	Case	Estimated Total Hazard Index[a]		Chemicals and Pathways that Contribute a Chemical- and Pathway-Specific Noncancer Hazard Quotient Greater than 1[b]	Primary Site-Specific Uncertainties
			Average	Reasonable Maximum		
Future Scenarios						
Boarding School Student (subchronic/ chronic)	1. Inhalation of vapors and dust	Student	0	0	None	Extension of facility from Grades 9-12 to Grades 1-12. Risk from accessing the site was not quantified. Lack of subchronic and chronic inhalation toxicity values for COPCs.
Old Town Galena Resident (chronic)	1. Inhalation of vapors and dust 2. Ingestion of groundwater 3. Dermal contact with groundwater 4. Inhalation of vapors while showering 5. Ingestion of fruits and vegetables irrigated or subirrigated with groundwater	Child Adult	0.01 0.003	0.02 0.006	None	Use of shallow groundwater as drinking water. Estimated concentrations in groundwater at Old Town Galena are the result of groundwater modeling. Estimated concentrations in air of shower stall and in fruits and vegetables are also the result of modeling exercises. Risk from accessing the site was not quantified. Lack of chronic inhalation toxicity values for COPCs

[a]Hazard indices printed in bold type equal or exceed the Superfund site remediation goal of 1 for noncarcinogens.
[b]Applicable only if the total hazard index exceeds 1.

Table 3-16 summarizes the primary sources of uncertainty specific to this assessment and the likely impact on risk estimates.

3.3.6 Conclusions and Recommendations

The CTDSA does not pose an unacceptable health risk to current on-base residents, Old and New Town Galena residents, workers who spend a majority of the workday outside in the immediate vicinity of the CTDSA, or to future boarding school students. The site also does not pose unacceptable health risk to future Old Town Galena residents who may use the shallow groundwater for drinking water if and when contaminants in the groundwater at the site migrate to Old Town Galena.

On the basis of the results of the human health assessment, there is no need to propose remedial action at the CTDSA.

3.4 Ecological Risk Assessment Results

3.4.1 Site Ecology

Figure 3-3 shows the location and features of the CTDSA, including topography. The CTDSA consists primarily of industrial development, and thus ecological features are limited. The BLM uses the eastern portion of the site to park aircraft and refueling trucks. Vehicle traffic may also occur at other parts of the site, and small aircraft may taxi through this area as well. A portion of the site is slated to be paved for the expansion of the tarmac near the control tower (Figure 3-3). This action will further reduce habitat quality. The CTDSA is mostly grass and gravel with a few stands of willow, alder, and spruce at the north edge of the site. Besides common birds such as robins and sparrows that are found throughout the Galena Airport, wildlife has not been noted on the site. Use of this area by fauna is marginal, and is likely to be limited to the common birds previously mentioned. Owing to the lack of accessible habitat and human activities, receptor exposure to surface soil at the CTDSA was not evaluated. Groundwater located beneath the site that might migrate to the shoreline of the Yukon River was evaluated for aquatic and semiaquatic receptors (i.e., pike, invertebrates, and spotted sandpiper).

3.4.2 Chemicals of Potential Ecological Concern

The results of the RI suggest the presence of limited areas of elevated VOC and TPH concentrations. These data are consistent with minor surface soil contamination from small leaks and spills. Aircraft and vehicle traffic are likely to be sources of hydrocarbons at this site. As stated above, ecological receptor exposure to soil was not considered because of lack of habitat. Thus, there were no COPECs for soil. A groundwater model was developed to estimate potential migration of chemicals to the Yukon River (see Appendix 4C). Groundwater COPECs for the CTDSA are presented in Table 3-17 and include organochlorine pesticides and VOCs. Section 3.2.2 in Volume 1 details the methods of COPEC identification. This table includes all chemicals in the groundwater with positive results greater than background and blank concentrations that were not eliminated as essential nutrients.

3.4.3 Exposure Assessment

Figure 3-4 shows the conceptual model for potential receptors and exposure pathways at the CTDSA. The area provides little ecological habitat because of industrial development, human activity, and lack of vegetation. Transportation of contaminants to the Yukon River via groundwater was the only exposure pathway evaluated. Ecological receptors evaluated in this pathway were the northern pike in the Yukon River and invertebrates and the spotted sandpiper at the shoreline. This pathway is the only potential ecologically significant exposure route for this site. The assessment and measurement endpoints are shown in Table 3-18.

3.4.4 Effects Assessment

EQs were calculated for the assessment endpoint species at the CTDSA. The results of this evaluation are presented in Table 3-19. Supporting spreadsheets are presented in Appendix 4K.

Table 3-16
Summary of the Major Uncertainties Associated with the Risk Estimates

Source of Uncertainty	Impact on Risk Characterization
Chemicals of Potential Concern	
Samples representing site media	Could result in an overestimate or underestimate of risks if the samples do not adequately represent media at the site. However, the number and location of samples collected at the CTDSA were sufficient to identify the area of contamination in soils and groundwater and assess the magnitude and extent of contamination. Surface soils, however, were defined as encompassing the top two feet of soil. Since exposures are generally limited to the top several inches, inclusion of the top two feet probably overestimates risk for surface soil pathways.
Analytical methods used to test samples	If the analytical methods used do not apply to some chemicals that are present at the site, risks could be underestimated. Since a full suite of analytical methods was selected to test for chemicals known or suspected to be present at the site, the potential for underestimation is reduced.
Presence of pesticides	Pesticides detected at the CTDSA were evaluated in the same fashion as all other COPCs. However, the pesticides result from widespread application for insect control and estimated risks from exposure to pesticides are not attributable to the CTDSA.
Contamination of blanks	Sporadic presence of chemicals in blanks samples was accounted for in blanks comparison. Blanks data do not indicate extensive field or laboratory contaminants.
Tentatively identified compounds	Tentatively identified compounds were not reported or assessed. Most such chemicals are not known to be highly toxic.
Diesel Range Organics and Gasoline Range Organics	DRO and GRO were not evaluated in the risk assessment as groups of chemicals. The assessment addresses individual chemicals only that were speciated by chemical analysis, which includes many constituent compounds of DRO and GRO. However, some constituent compounds were not on the target analyte list. The majority of the risk associated with exposure to DRO and GRO is probably accounted for in an assessment of individual chemicals.
Detection Limit Adequacy	The minimum detection limit for a few analytes in groundwater that were eliminated as COPC (because they were not detected) exceeds the USEPA Region III tap water RBCs. These include several PNAs, PCBs, SVOCs, and VOCs. The same is not true for analytes in the soil (when compared to Region III residential soil ingestion RBCs). If these analytes are in fact present and were contributed to the groundwater by site-related activities, the estimated risks for this site may be underestimated. However, since 1993 and later sampling events reported uncensored data (where an ND is reported only if there is no instrument response), the impact on the risk estimates is minimized.

Table 3-16
(Continued)

Source of Uncertainty	Impact on Risk Characterization
Exposure Assessment	
Use of current measured concentrations to represent current and future concentrations in the exposure media	Because concentrations of chemicals in the soils and groundwater at the CTDSA may decrease over time as the chemicals migrate and/or degrade, risks estimates for the current scenarios do not necessarily represent risks that will occur in the future.
Inclusion of groundwater pathways	Most Old Town Galena residents have their drinking water trucked in from the New Town area; however, there are at least seven wells still in use in the Old Town area (USAF, 1995b). Use of the shallow groundwater for tap water, therefore, cannot be ruled out. Risks associated with use of the shallow groundwater do not apply to residents who use other sources of water for domestic purposes.
Groundwater modeling	Results of groundwater modeling are indicative of worst-case concentrations that might reach Old Town Galena and the Yukon River. Impacts are likely overestimated for the groundwater pathways.
Estimation of plant uptake of COPCs from groundwater	Models to estimate plant uptake of chemicals are extremely simplified and could lead to an over- or underestimate of COPC concentrations in fruits and vegetables. Since the shallow groundwater is assumed to provide 100% of the plants' water requirements, either through irrigation or subirrigation, the concentrations in fruits and vegetables are probably overestimated.
Access to site	Access to the CTDSA is open. On-base residents and Galena residents are not restricted from walking on the site. Exposure of a roaming resident was not quantified (see discussion in Section 3 of Volume 1). If a resident spends a significant amount of time in the CTDSA area, estimated risks for that resident may be underestimated.
Tarmac expansion	The planned tarmac expansion will reduce the size of the area that is available for direct human exposures. Therefore, risks that were quantified assuming exposure to the entire area are probably overestimated.
Exposure parameter estimation	The standard assumptions regarding body weight, period exposed, life expectancy, and population characteristics may not be representative of any actual exposure situation. Some assumptions may underestimate risks, but most probably overestimate risk. In some cases, nonstandard assumptions were used for site-specific reasons, such as the reasonable maximum exposure duration of 70 years for Galena residents. The use of a 14-year exposure duration for the boarding school student overstates the likely duration of residence for most students.

Table 3-16
(Continued)

Source of Uncertainty	Impact on Risk Characterization
Toxicity Assessment	
Absence of toxicity values for some chemicals detected at the site	Lack of toxicity values may result in underestimation of risk; however, most chemicals that lack toxicity values are not very toxic or carcinogenic. Therefore, the degree of underestimation is probably low.
Use of unverified toxicity values for some chemicals	Could result in an overestimate of risk. However, chemicals with unverified toxicity values do not contribute significantly to estimated risks at the CTDSA.
Bases for derivation of toxicity values	Some common sources of uncertainty in toxicity values include 1) use of information obtained from dose-response studies conducted in laboratory animals to predict effects that are likely to occur in humans; 2) use of dose-response information from effects observed at high doses to predict adverse health effects that may occur at the low levels to which humans are likely to be exposed in the environment; 3) use of information obtained from short-term exposure studies to predict health effects in humans exposed on a long-term basis; 4) use of toxicity values that have been developed for one route of exposure and employing it under a different exposure route; and 5) use of information gathered in studies using homogeneous animal populations (inbred strains) or health human populations (occupational exposures) to predict the effects that are likely to occur in the general human population.
Absence of dermal toxicity values	Unadjusted oral toxicity values were used to evaluate dermal exposures. Since most oral values are based on administered dose and dermal exposure is quantified as an absorbed dose, risks from dermal exposure might be underestimated. PNAs were not evaluated for dermal exposures per USEPA guidance (see discussion in Section 3 of Volume 1). PNAs are associated with neoplasia in a variety of mammalian systems. The inability to quantify risks from dermal exposure to PNAs results in an underestimation of risks for the dermal pathway for PNAs.
Possible synergistic or antagonistic effects of exposure to multiple chemicals	Unknown impact on risk estimates. Chemical- and pathway-specific risk and hazard quotients are summed to account for possible additive effects.
Risk Characterization	
Applicability of cancer risk estimation methodology to subchronic exposure durations	The estimated intake for cancer risk estimation is averaged over a 70-year period. Exposure to higher concentrations of potential carcinogens for a short duration of time probably does not have the same effect as exposure to lower concentrations over a long duration.

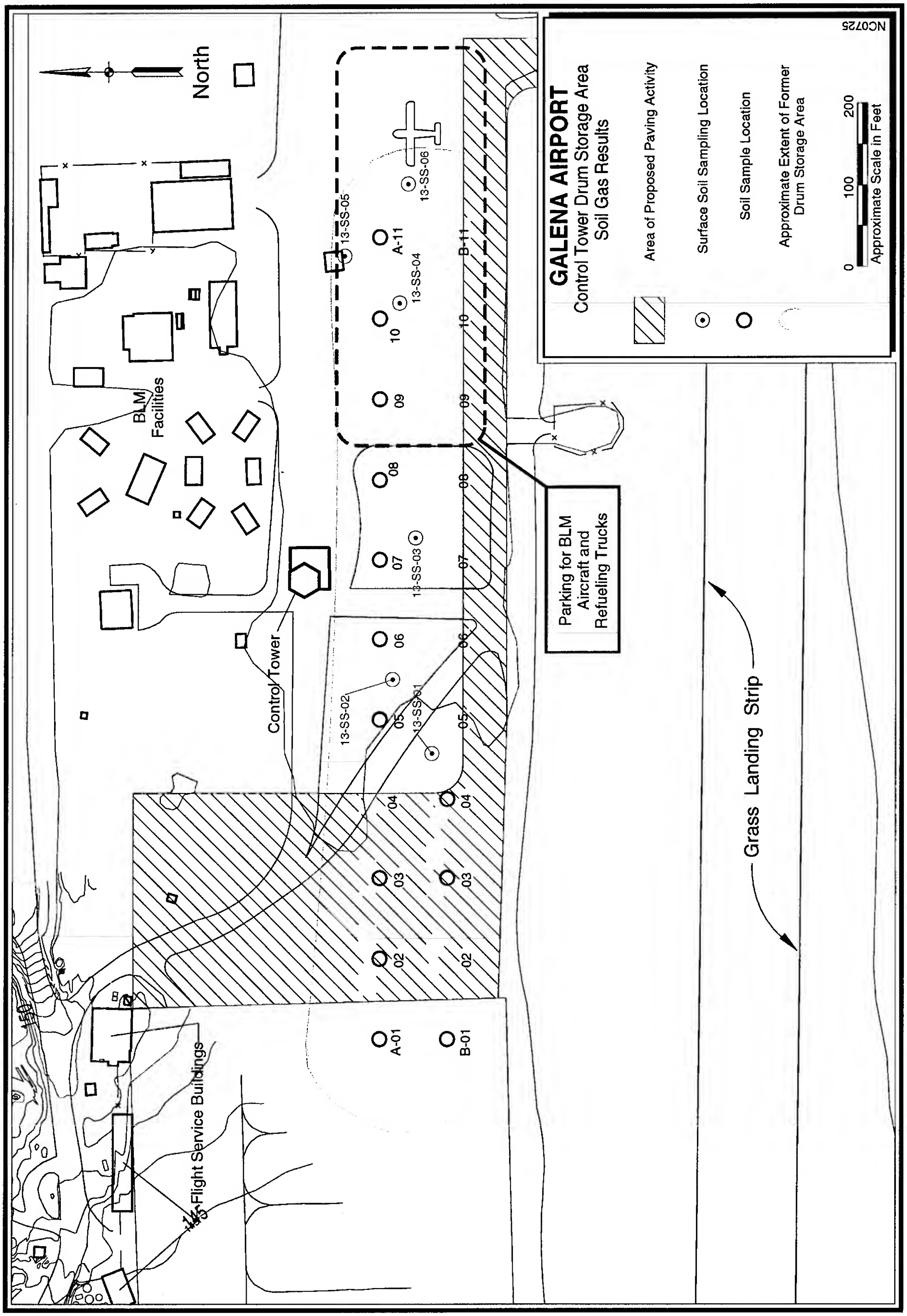


Figure 3-3. Control Tower Drum Storage Area, South

Table 3-17
Chemicals of Potential Ecological Concern in Discharged Groundwater from the CTDSA

Chemical	
Pesticides	
4,4'-DDE	Endosulfan I
Aldrin	gamma-BHC (Lindane)
beta-BHC	Heptachlor
Dieldrin	Heptachlor epoxide
Volatiles	
1,2-Dichloroethane	m&p-Xylene
cis-1,2-Dichloroethene	trans-1,2-Dichloroethene
Dibromomethane	Trichloroethene

Note: No other media evaluated for COPECs.

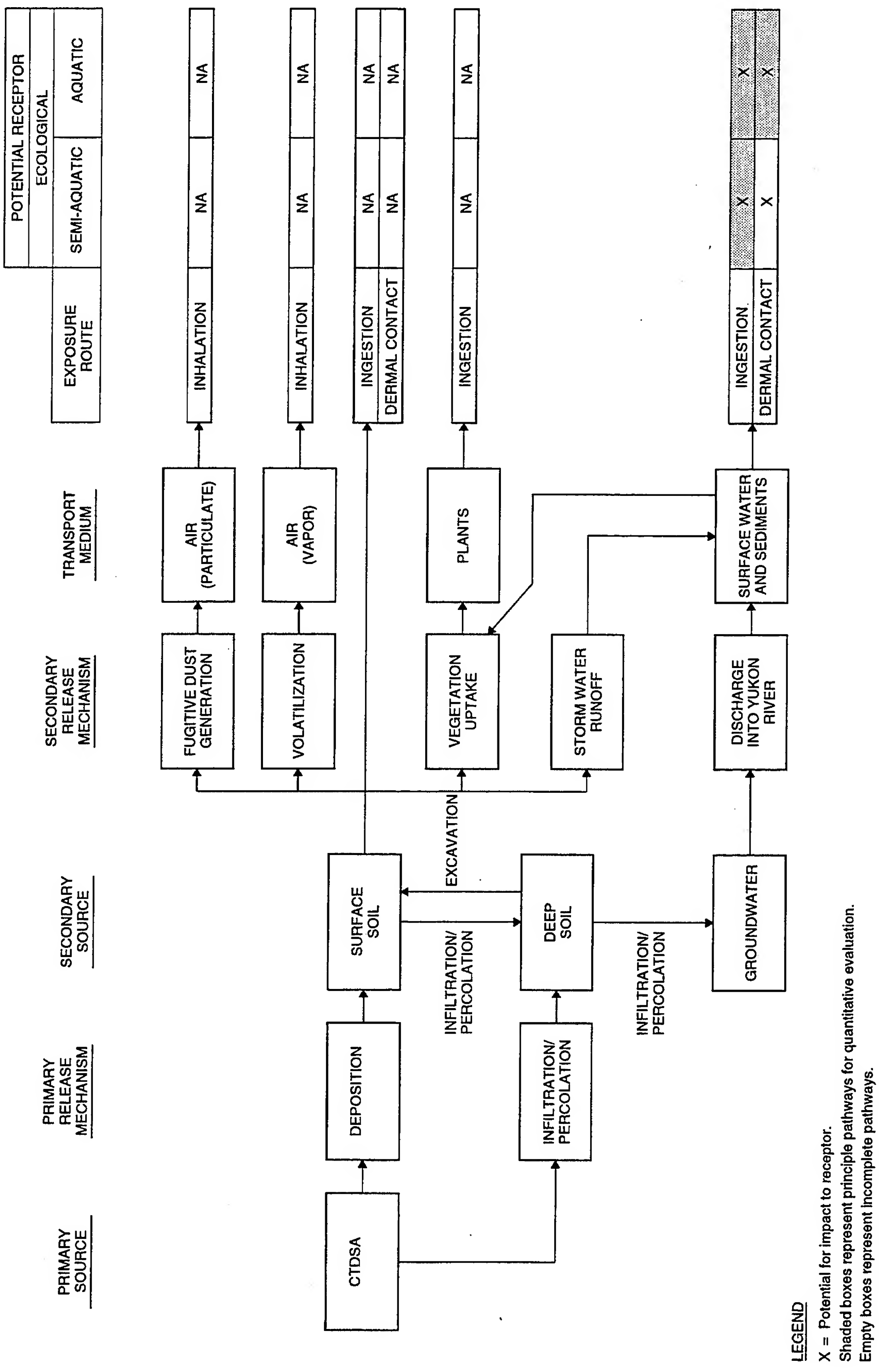


Figure 3-4
Conceptual Site Model Showing Potential Ecological Receptors and Exposure Pathways at the CTDSA

Table 3-18
Assessment and Measurement Endpoints for the Evaluation of Surface Water[a] Contaminants Originating From the CTDSA

Assessment Endpoint	Measurement Endpoint
Decrease in aquatic invertebrate productivity and local population survivorship.	AWQC for the protection of aquatic life.[b]
Decrease in spotted sandpiper productivity and survivorship.	LOAELs[c] with effects such as decreased eggshell thickness or reduced survival.
Decrease in local northern pike productivity and population survivorship in the Yukon River.	LOAELs[c] with effects such as decreased gamete production, growth rate, or reduced survival.

[a] Individual surface water areas include where shoreline exist part of the year. The aquatic ecosystem is the Yukon River. Modeled groundwater data that migrated from the site to the shoreline and Yukon River was used.

[b] If AWQCs are unavailable (including AWQC-recommended LOAELs), LC_{50} values were used.

[c] If LOAELs are unavailable, LC_{50} values were used.

Table 3-19
Summary of Aquatic and Semiaquatic EQs

Chemical	Northern Pike EQ	Aquatic Invertebrate EQ	Sandpiper EQ
1,2-Dichloroethane	1.38E-11	5.18E-08	1.35E-06
4,4'-DDE	2.37E-07	2.92E-01	**6.03E+00**
Aldrin	1.61E-07	1.99E-01	1.49E-02
beta-BHC	1.06E-07	2.21E-06	8.36E-06
cis-1,2-Dichloroethene	1.07E-10	1.32E-03	a
Dibromomethane	a	a	a
Dieldrin	1.46E-07	6.13E-28	3.96E-29
Endosulfan I	7.60E-71	9.38E-65	2.81E-69
gamma-BHC	1.35E-07	7.42E-07	1.71E-07
Heptachlor	5.81E-45	2.75E-108	8.05E-111
Heptachlor epoxide	3.19E-07	2.88E-01	8.42E-04
Meta-&Para-Xylene	1.04E-08	8.72E-05	6.05E-07
trans-1,2-Dichloroethene	6.12E-12	7.55E-05	a
Trichloroethene	1.17E-11	1.25E-05	a

a = no toxicity data available

3.4.5 Ecological Risk Characterization

Table 3-20 lists the EQ values greater than 1 for the aquatic and semiaquatic species. This table also provides the order of magnitude of the EQ results. Table 3-21 lists the percent contribution to the spotted sandpiper EQ from water and invertebrates.

3.4.6 Uncertainty Assessment

Uncertainty occurs in almost every step of the ERA process. As stated previously, uncertainty is often addressed by making intentionally biased (health conservative) assumptions so that impacts will not be underestimated. Individual assumptions are therefore conservative, but because of compounded bias the calculated EQs are biased higher than any individual assumption. Table 3-9 in Volume 1, Section 3 lists the uncertainties associated with the ERA. Table 3-22 lists the uncertainties associated with the ERA conducted for the CTDSA.

3.4.7 Conclusions and Recommendations

Aquatic (surface water → pike)

This exposure pathway considered groundwater beneath the CTDSA that potentially could migrate to the Yukon River, where exposure to the northern pike potentially could occur. None of the COPECs evaluated in this assessment showed an EQ above 1 for the northern pike. AWQC were used as the measurement endpoints when they existed. AWQC are highly conservative, since they are designed to protect most aquatic species.

Semiaquatic (surface water → aquatic invertebrate → spotted sandpiper)

This exposure pathway used modeled concentrations of contaminants in groundwater discharging to the surface at the Yukon River shoreline. No dilution or volatility factors were applied to the discharged concentrations. An EQ greater than 1 for 4,4'-DDE was noted for the spotted sandpiper and is shown in Table 3-20. This EQ indicates possible risk to the spotted sandpiper. There were no COPECs noted to have EQs above 1 for the aquatic invertebrate.

Spotted Sandpiper

The EQ in the spotted sandpiper for DDE was 6.03. EQs did not exceed 1 for the aquatic invertebrates or the northern pike. AWQC were used as the TBs and are highly conservative, since AWQC are designed to be protective of most aquatic life. NOAEL values obtained for the heron were used to assess impacts to the spotted sandpiper. DDT and its metabolites (DDE and DDD) are organochlorine pesticides that are recalcitrant and lipophilic compounds that can enter the food chain easily and progressively biomagnify to organisms at the top of the food chain such as fish-eating birds. Because of the extensive past use of DDT worldwide, and the persistence of the compounds, these materials are virtually ubiquitous and are continually being transformed and redistributed in the environment. A steady-state BCF of 12,000 for rainbow trout was applied to estimate the concentration in the aquatic invertebrate as the food for the spotted sandpiper. This value is based on ingestion of fish lower on the food chain and exposure to the surrounding media (i.e., water and sediment) (ATDSR, 1994). Table 3-21 indicates that 99% of the EQ contribution was from invertebrate ingestion and only 1% was from ingestion of water. Organochlorine pesticides such as DDT were used extensively at the Galena Airport for insect control. The CTDSA does not represent a unique source for DDT and its metabolites.

In summary, constituents were evaluated for their aquatic toxicity, and chemical and physical effects in an aquatic system (i.e., the Yukon River) if their calculated EQ exceeded 1 for the assessment endpoint species. For the northern pike and aquatic invertebrate, it was determined that there was not significant potential for risk from the CTDSA groundwater discharge. AWQC were used as the measurement endpoints when they existed. AWQC are highly conservative, since they are designed to protect most aquatic life. Organochlorine insecticides could possibly affect the spotted sandpiper population adversely. Organochlorine insecticides such as DDT historically were used over

Table 3-20
EQ Value Greater than 1 for Aquatic and Semiaquatic Species at the CTDSA

Chemical	EQ > 1	EQ >10
4,4'-DDE	Spotted Sandpiper	

Table 3-21
Percent Contribution to the Spotted Sandpiper EQ from Water and Invertebrate Intake

Chemical	EQ	% EQ Water	% EQ Invertebrate
4,4'-DDE	6.03	0.9	99

Table 3-22
Uncertainties of ERA at the CTDSA

Parameter	Assumption	Uncertainty
Pathway: Surface Water → Pike		
Groundwater migration	Groundwater beneath the POL migrates and is discharged to the Yukon River where exposure to the pike occurs.	Concentrations were modeled from the POL to the shoreline with no co-mingling or interferences. The magnitude of the uncertainty would be low, bias neutral.
	Groundwater modeling accurately estimated the concentration of COPECs in the Yukon River.	Due to restricted dilution (5 ft. from shoreline) actual concentrations that pike are exposed to are probably over-estimated. Concentrations may be higher or lower. Magnitude of uncertainty would be low-high, bias high.
Assessment endpoint species - Pike	Pike are present in the Yukon River near Galena all year.	Pike are present in the general area, but may not be near Galena all year. The ERA assumption is conservative, uncertainty would be low, bias high.
Pathway: Surface water → Invertebrates → Spotted Sandpiper		
Groundwater migration	Groundwater modeling accurately estimated the concentration along the mudflats/shoreline	No dilution, volatility factors or attenuation was applied to these concentrations. Actual exposure concentrations are likely much lower than predicted. The magnitude of uncertainty would be low, bias high.
Exposure concentration and time	Invertebrates and sandpiper are exposed to the estimated concentrations at the mudflats during entire time species are on site.	Invertebrates may remain in a small geographic area and could be exposed to discharging groundwater continually; however, the spotted sandpiper is mobile and this assumption is highly conservative. The magnitude of uncertainty is low, bias high.
	The spotted sandpiper's water intake is 100% from the discharging groundwater.	The spotted sandpiper travels along the shorelines searching for food. To assume that 100% of water intake is from discharging groundwater is highly conservative. The magnitude of uncertainty is low, bias high.
Bioavailability of COPECs	All COPECs were assumed to be 100% bioavailable.	Bioavailability changes as physical conditions such as pH or % carbon changes. This assumption is conservative. The magnitude would be low-high, bias high.
Bioconcentration factors	Bioconcentration factors (BCF) were applied to estimated invertebrate tissue concentrations of COPECs.	BCFs can vary depending on conditions of the study that determined the BCF. Applied to this ERA, they may over or underestimate tissue concentrations. Magnitude of uncertainty is low-high, bias neutral.

the entire Airport for insect control, and the CTDSA does not represent a unique area of contamination. AWQC were used as the TBs and are highly conservative, since they are designed to be protective of most aquatic life. NOAEL values in birds were used to assess impacts to the spotted sandpiper.

Section 4
COMBINED IMPACTS

The Southeast Runway Fuel Spill site and the CTDSA are located about 1600 ft apart in the central area of the airport. The POL Tank Farm and the West Unit (evaluated in Volume 1) are located adjacent to each other on the west side of the installation. The FPTA (also evaluated in Volume 1) is less than two miles away on the east side of the installation. Additive impacts of all five sites are considered in Section 4.1 for the human health assessment and in Section 4.2 for the ecological assessment.

4.1 Human Health Assessment

For the human health assessment, combined impacts of individual exposure scenarios and individual sites are evaluated.

4.1.1 Exposure Scenario Combinations

Combinations of exposure pathways make up a defined exposure scenario. It is sometimes possible that one individual can be exposed to site-related contaminants by the pathways represented in more than one exposure scenario. Exposure scenario combinations that are possible and were addressed include the following:

1. Child and adult Galena resident (to represent an individual who is born in Galena and continues to live there through adulthood);

2. On-base resident and on-base worker (to represent an individual who lives and works on base); and

3. Construction workers at individual sites (to represent construction workers who work at more than one site during different time periods).

Child and Adult Galena Resident

If the child scenario is added to the adult scenario for Galena residents, the average case represents an individual born in Galena who resides there for 31 years (6 + 25 years) and the reasonable maximum case represents a 76 year exposure duration (6 + 70 years). Combined child plus adult scenario cancer risk estimates for current Old Town Galena residents are as follows:

	Average	Reasonable Maximum
FPTA	7E-10	2E-09
POL Tank Farm	6E-08	2E-07
West Unit	1E-08	3E-08
Southeast Runway	8E-06	4E-05
CTDSA	7E-12	2E-11

These risk estimates are well below levels of concern, except for the Southeast Runway Fuel Spill site estimates. Although the combined risk estimates at this site exceed 1 in one million, they are not substantially higher than those already reported for child and adult residents individually and do not alter conclusions based on the individual results. Combined noncancer HIs are well below levels of concern at all sites. Combined risk estimates for New Town Galena residents are lower than those for Old Town Galena.

Evaluation of the Southeast Runway Fuel Spill site and the CTDSA also involved quantifying risks for future Old Town Galena residents, assuming migration of contaminants in the groundwater to locations in Old Town Galena and use of the shallow groundwater as tap water. Combined child plus adult scenario cancer risk

estimates for future Old Town Galena residents are as follows:

	Average	Reasonable Maximum
Southeast Runway	5E-05	2E-04
CTDSA	3E-07	1E-06

These risk estimates are not substantially higher (within same order of magnitude) than those already reported for child and adult residents individually and do not alter conclusions based on the individual results.

On-Base Resident and On-Base Worker—It is likely that many on-base residents also work on base. Adding the risks estimated for the on-base resident to that estimated for the on-base worker will overstate the risks for the resident who works on base because it is assumed that the resident is exposed for 24 hours/day to contaminants in the air medium at the location of the residences. However, because the estimated risks for the long-term on-base resident are either 0 or several orders of magnitude lower than the estimated risks for the long-term on-base worker at all five sites, combined risk estimates are the same as the estimated risks for the worker.

Construction Workers—Combined cancer risk estimates for a construction worker who works at each of the five sites during different time periods total 7E-05 for the average case (which assumes a three-month construction project at each site) and 1E-04 for the reasonable maximum case (which assumes a six-month construction project at each site). Estimated cancer risks for the construction worker at the FPTA, the West Unit, the Southeast Runway Fuel Spill site, and the CTDSA are at least an order of magnitude lower than those estimated at the POL Tank Farm; therefore, the combined risks are essentially the same as the POL Tank Farm estimates. Combined noncancer HIs do not exceed 1.

4.1.2 Site Combinations

Media that might receive contributions of contaminants from the different sites at the same location include ambient air, groundwater, and surface water in the Yukon River.

Ambient Air—Each of the five sites contributes volatile and dust emissions to the air that were modeled to residential and boarding school student receptor locations. Risk estimates for the individual sites considered only the contribution of that site. Estimated combined cancer risks from inhaling contaminants in the ambient air from all five sites are as follows:

	Average	Reasonable Maximum
Short-term On-Base Resident (adult)	5E-08	1E-07
Long-term On-Base Resident (adult)	2E-07	7E-07
Old Town Galena Resident (adult)	6E-08	2E-07
New Town Galena Resident (adult)	4E-09	2E-08
Boarding School Student (student)	4E-07	1E-06

Combined cancer risks for the air pathway remain lower than 1 in one million for all residential scenarios and was equal to 1 in one million in the reasonable maximum case for the boarding school student scenario. However, this risk estimate is based almost entirely (98%) on exposure at the POL Tank Farm. Combined HIs for the air pathway for all scenarios remain lower than 1. Air pathway estimates for the worker scenarios were not combined; presumably the ambient air directly above a site is more

heavily affected by emissions to the air from that site than it is by emissions from a more distant site.

Groundwater—Several of the groundwater contaminant plumes from source areas within the West Unit have commingled, and groundwater modeling considered the contribution of each source together (e.g., groundwater at the Waste Accumulation Area and Power Plant UST No. 49). However, it is unlikely that groundwater plumes from the FPTA, the POL Tank Farm, the West Unit, the Southeast Runway Fuel Spill site, and the CTDSA will commingle to any great extent before discharging to the Yukon River. Commingling of groundwater plumes from the West Unit and POL Tank Farm might occur but it is unlikely to significantly increase groundwater concentrations at any one location. Even if the plumes do commingle, the implications to identified receptors are minimal. There are no existing wells in areas downgradient of the West Unit and POL Tank Farm, nor are there likely to be wells installed in the future that draw from the shallow groundwater. Therefore, the combined impact of the five sites on groundwater quality is not evaluated.

Surface Water—Groundwater that flows under each of the sites discharges to the Yukon River. It is possible that discharges that occur at an upstream site will commingle with the discharges from other sites. The modeling that was performed takes additive impacts into account. Concentrations that are predicted in the river include the contribution of the individual site plus the contribution of upstream sites or source areas. For example, the estimated concentrations in the river attributed to the CTDSA actually include the contributions of other sites that discharge upstream of the CTDSA, such as the Southeast Runway Fuel Spill site and the FPTA. Consequently, additive impacts on the surface water in the river and uptake by fish have already been addressed.

4.2 Ecological Assessment

Combined impacts for ecological receptors may occur in two ways: through exposures to a receptor by more than one pathway (e.g., ingestion of soils and ingestion of food items) and/or through exposures of a receptor to contaminants at more than one IRP site.

4.2.1 Combined Pathways

Exposures to trophic exposure pathways are evaluated on a site-specific basis for the FPTA, POL Tank Farm, and the West Unit in Sections 4.4, 5.4, and 6.4, respectively (evaluated in Volume 1). Results of these assessments are summarized here and exposure from multiple sites is also detailed.

FPTA—For the FPTA, EQs were derived that considered multiple pathways for the kestrel (ingestion of soil and savannah sparrows), red fox (ingestion of soil and meadow voles), meadow vole (ingestion of soil and plants), savannah sparrow (ingestion of soil and invertebrates), and spotted sandpiper (ingestion of water and invertebrates). The relative contribution of each pathway for each species is shown in Tables 4-25 and 4-26 (in Volume 1). One primary pathway of exposure was considered for terrestrial plants (exposure to soils), terrestrial and aquatic invertebrates (exposure to soils and surface waters, respectively), and the northern pike (exposure to surface water). Thus, combining pathways was applicable for these species.

Risk to plants, terrestrial invertebrates, red fox, and kestrel were determined to be minimal. Through evaluation of the toxicity data and physical properties of the contaminants with EQs above 1 in the context of the FPTA, it was determined that only dioxin and fluorene

have potential for risk to the meadow vole. Dioxin had an EQ in the possible risk range (1 < EQ < 10), and fluorene had an EQ in the probable risk range (EQ > 10). The potential risk from dioxin was primarily from soil ingestion (93.9%); the potential risk from fluorene was primarily from ingestion of food (plants, 85.9%). After consideration of toxic and physical properties for contaminants with EQs above 1 for the savannah sparrow, it was determined that only DDT, its breakdown products, and dioxin showed potential for risk. DDT and its breakdown products were in the probable risk range, and dioxin was in the possible risk range. Potential risk from all of these chemicals was primarily from consumption of food (97.7% contribution to total EQ from invertebrates).

For the aquatic and semiaquatic pathways, potential risks to the pike were minimal. Aquatic invertebrates were evaluated with AWQC for the protection of most aquatic life, and EQs in the possible risk range were derived for dieldrin, heptachlor epoxide, and lead. An EQ in the probable risk range was derived for DDT. For the spotted sandpiper, an EQ was derived that estimated the potential for risk from exposure to contaminants from the ingestion of groundwater discharged at the Yukon River mudflats and food ingestion pathways. The percent contribution of each of these pathways to this EQ is presented in Table 4-25 of Volume 1. DDT exhibited probable risk to the sandpiper with 99% contribution from the food ingestion pathway. Lead exhibited possible risk with 72.3% contribution from the water ingestion pathway.

It should be noted that pesticides (DDT, dieldrin, and heptachlor) were historically broadcast throughout the Airport for pest control, and therefore, the FPTA does not represent an isolated area of high concentrations.

POL Tank Farm—Combined pathways were used to assess risk for the spotted sandpiper from potential POL Tank Farm groundwater discharge to surface waters of the Yukon River. The relative contributions of potential risks due to water ingestion and aquatic invertebrate ingestion are presented in Table 5-22 of Volume 1. Single pathways were used to evaluate impacts to aquatic invertebrates and the northern pike because only risk from exposure to groundwater discharge was considered important.

Toxic, chemical, and physical effects in the context of the Yukon River for those chemicals with EQs greater than 1 were evaluated for all assessment endpoints. For the northern pike, no significant potential for risk from POL Tank Farm groundwater discharge was determined. Chemicals that were considered to pose potential risk to aquatic invertebrates and the spotted sandpiper were DDT, 2-methylnaphthalene, lead, and thallium. DDT, 2-methylnaphthalene, and thallium exhibited EQs in the probable risk range, whereas the EQ for lead was in the possible risk range. For the spotted sandpiper, these EQs combined effects from ingestion of surface waters and aquatic invertebrates. Table 5-22 of Volume 1 shows that potential risks were primarily due to ingestion of invertebrates, except for thallium and lead where ingestion of surface water was the primary pathway.

Organochlorine pesticides historically were used over the entire Airport for insect control, and the POL Tank Farm does not represent a unique area of contamination. Dilution and adsorption to sediments can attenuate the assessment endpoint species' exposure to lead and thallium. On the basis of the transient nature of the mudflats or shoreline as an ecosystem, and the dilution of the constituents as they enter surface water, the population impacts of groundwater from the POL Tank Farm at the mudflats is minimal.

West Unit—Combined pathways for the West Unit were used to assess risk for the Waste Accumulation Area, Million Gallon Hill, Building 1845, and JP-4 Fillstands groundwater discharge impacts to the spotted sandpiper at the Yukon River mudflats. The contributions to potential risks due to water ingestion and aquatic invertebrate ingestion were combined in the EQ evaluation (Table 6-26 in Volume 1). Single pathways were considered for assessment of impacts to aquatic invertebrates and the northern pike because only risk from exposure to groundwater discharge was considered important for evaluation.

No chemicals were found to pose significant risk to northern pike in the Yukon River. After consideration of toxic and physical properties for contaminants with EQs above 1 (Table 6-25 of Volume 1), only dieldrin for aquatic invertebrates and DDT for both invertebrates and the spotted sandpiper were shown to have significant potential for posing risk in the Yukon River mudflats from groundwater originating from the Waste Accumulation Area. The EQ for dieldrin was in the possible risk category and the EQs for DDT were in the probable risk category. The combined impacts of water ingestion and invertebrate ingestion were assessed for the spotted sandpiper. Table 6-30 of Volume 1 shows that 99% of the potential risk was from ingestion of invertebrates. This assessment shows potential for risk to these pesticides. However, the pesticides originating from the Waste Accumulation Area do not represent high concentrations relative to the Galena area in general because such chemicals were historically applied for pest control.

Contaminants shown to have significant potential for risk to aquatic invertebrates and the spotted sandpiper at Million Gallon Hill are DDT, DDE, and DDD. The assessment of potential risk for these chemicals for the sandpiper included evaluation of ingestion of surface water and ingestion of aquatic invertebrates. Table 6-30 of Volume 1 shows that 99% of the potential risk was from ingestion of invertebrates. Consideration of toxic and physical properties for other Million Gallon Hill contaminants with EQs above 1 (Table 6-25 of Volume 1) indicates that these chemicals are not likely to pose significant risk to assessment endpoints at the Yukon River mudflats or shoreline.

Organochlorine pesticides from Bldg. 1845 and the JP-4 Fillstands groundwater potentially pose significant risk to aquatic invertebrates and the spotted sandpiper at the Yukon River mudflats. For the aquatic invertebrates, DDT, DDE, DDD, aldrin, dieldrin, endrin aldehyde, and heptachlor epoxide are pesticides with EQs above 1 for groundwater discharge from Bldg. 1845, and for the JP-4 Fillstands, DDT, DDD, aldrin, and endrin aldehyde are groundwater discharge chemicals with EQs above 1. For the spotted sandpiper, DDD, DDE, and DDT, are pesticides with EQs above 1 for groundwater discharge from Bldg. 1845, and for the JP-4 Fillstands, DDT, DDD, are groundwater discharge chemicals with EQs above 1. The assessment of potential risk for these chemicals for the sandpiper included evaluation of ingestion of surface water and ingestion of aquatic invertebrates. Table 6-30 of Volume 1 shows that 99% of the potential risk form pesticides was from ingestion of invertebrates. Consideration of toxic and physical properties for other Million Gallon Hill contaminants with EQs above 1 (Table 6-25 of Volume 1) indicates that these chemicals are not likely to pose significant risk to assessment endpoints at the Yukon River mudflats.

The only areas of the West Unit with potential for terrestrial impacts (population survivorship and productivity) were the Waste Accumulation Area and Million Gallon Hill. In

each of these areas, EQs were derived that considered multiple pathways for the kestrel (ingestion of soil, water, and robins), fox (ingestion of soil, water, and meadow voles), meadow vole (ingestion of soil, water, and plants), and robin (ingestion of soil, water, and invertebrates). The relative contribution of each pathway is given in Table 6-28 of Volume 1. One primary pathway of exposure was considered for terrestrial plants (exposure to soils) and terrestrial invertebrates (exposure to soils).

In both of these terrestrial areas of the West Unit, EQs for DDD, DDE, and DDT were above 1 for the robin. DDT had an EQ of 1.08 in the kestrel from the waste accumulation area, but this was the only risk determined for the kestrel, an upper trophic level receptor. Also in the Waste Accumulation Area, an EQ of 10.4 was calculated for gamma-BHC (Lindane) in the terrestrial invertebrate.

Southeast Runway Fuel Spill Site—Similar to those at the FPTA, EQs were derived that considered multiple pathways for the kestrel, red fox, meadow vole, robin, and spotted sandpiper. One pathway was considered for terrestrial plants, terrestrial and aquatic invertebrates, and the northern pike. Combining exposure pathways was applicable for all of these assessment endpoint species.

Risk to terrestrial invertebrates, red fox, and kestrel were determined to be minimal. Through evaluation of the toxicity data and physical properties of the contaminants with EQs above 1 in the context of the Southeast Runway Fuel Spill site, it was determined that PNAs have potential for risk to the meadow vole and the robin. Additionally, bis(2-ethylhexyl)phthalate may have impacts on the robin and lead may have potential for risk to terrestrial plants. All of the EQ levels for the terrestrial receptors were below 10, with the exception of benzo(b)fluoranthene, which had an EQ in the probable range (EQ > 10) in the robin. For the meadow vole, direct ingestion of soil accounted for 50 to 78% of the exposure to PNAs, whereas robin exposure occurred through ingestion of the invertebrate (78%). Exposure of the robin to bis(2-ethylhexyl)phthalate was almost completely due to ingestion of terrestrial invertebrates (99%).

For the aquatic and semiaquatic pathways, potential risks to the pike and spotted sandpiper were minimal. Aquatic invertebrates and the northern pike were evaluated with AWQC as the TB, when available. AWQC are protective of aquatic life, and represent conservative TBs. EQs in the probable range were derived for 2-methylnaphthalene and fluorene in the aquatic invertebrate.

CTDSA—Combined pathways were used to assess the spotted sandpiper from groundwater discharge to surface waters of the Yukon River. Single impacts were used to evaluate impacts to aquatic invertebrates and the northern pike because only risk from exposure to groundwater discharge was considered important.

Chemicals with EQ values greater than 1 were reviewed for physical and chemical fate in the environment and toxicity in fish, freshwater aquatic invertebrates, and birds. After review of toxicity and environmental fate, only 4,4'-DDE in the spotted sandpiper was shown to have potential for posing risk from groundwater originating from the CTDSA. The EQ for 4,4'-DDE was calculated to be in the possible category (i.e., 1< EQ <10). For the spotted sandpiper, an EQ was derived that estimated the potential for risk from exposure to contaminants from the ingestion of groundwater discharged to surface water at the shoreline and food (i.e., aquatic invertebrates). The aquatic invertebrate, as food for the spotted sandpiper, contributed

99% to the spotted sandpiper EQ. It should be noted that organochlorine insecticides (DDT, dieldrin, and heptachlor) were historically broadcast throughout the Galena Airport for insect control, and therefore, the CTDSA does not represent a source area of organochlorine insecticides.

4.2.2 Site Combinations

Sites with multiple source areas, such as the Galena Airport, have the potential for receptor exposure to more than one source area. Sections 4.4, 5.4, and 6.4.4 of Volume 1 estimate the potential for risk to assessment endpoints at the FPTA, POL Tank Farm, and the West Unit, respectively. The Southeast Runway Fuel Spill site and the CTDSA are presented in Sections 2.4 and 3.4. As described above, risk due to combinations of pathways has been considered in these estimates. This section estimates the potential for combined risk for receptor exposure to multiple sites.

For ecological receptors, the primary factors that affect exposure to multiple source areas are home range (mobility) and habitat availability. For most soil and sediment invertebrates and plants, multiple site exposure is precluded due to relative immobility. Species with relatively small home ranges are less likely to encounter multiple sites than are species with large home ranges. Moreover, even if home range size makes it possible for encounters of multiple sites, when the appropriate habitat is not available, it is not likely that multiple exposures will occur. The potential for multiple exposures was evaluated for the assessment endpoints at each IRP source area and is summarized below.

The FPTA is approximately 1.5 miles from the terrestrial ecological areas of concern at the West Unit (Waste Accumulation Area and Million Gallon Hill) and approximately 0.3 miles from the Southeast Runway Fuel Spill site. For terrestrial receptors, all species except the fox and the kestrel have home ranges that would preclude frequent encounters with both the West Unit sites and the FPTA; however, all of the mobile terrestrial receptors could frequent the FPTA and the Southeast Runway Fuel Spill site. The kestrel has a home range of approximately 499 acres (Appendix I, Volume 3), and the home range for the fox is approximately 1771 acres (Appendix I, Volume 3). Thus, strictly evaluating home range size indicates that these species easily would have access to any area of the Airport, assuming the center of their home range was within the Airport or near the Airport.

Available habitat for these two species is of better quality at the FPTA and Southeast Runway Fuel Spill site than at the West Unit. The FPTA is located in the large grasslands that surround the eastern runway areas, and there are areas of trees and shrubs along the perimeter dike to the north, east, and south. The dike area provides cover, nesting, and foraging sites for the fox. The dike provides cover and nesting sites for the kestrel. The grassland areas and edges of the wooded areas are good foraging areas for both species, although less so when the grasses are mowed frequently. The Southeast Runway Fuel Spill site is primarily vegetated with grass; however, alders and willows from along the slope of the dike providing habitat for perching birds which are commonly noted. These same habitat types are found at the Waste Accumulation Area, but Million Gallon Hill contains only wooded slopes and cleared, formerly wooded areas at the base of the hill that will presumably returned to wooded areas as taiga wetland. Thus, Million Gallon Hill offers little habitat for the kestrel because there are no open vegetated areas (e.g., grasslands) for foraging. Overall, the abundance of habitat is much less in both areas, the grassy areas of the

Waste Accumulation Area and Southeast Runway Fuel Spill site are mowed frequently reducing habitat value, and the degree of human disturbance is greater at the West Unit. Moreover, it is important to note for the fox that there is higher quality habitat outside of the Airport in undisturbed areas, thus further decreasing the likelihood of combined utilization of the source areas. For the kestrel, utilization of infrequently mowed grasslands in areas of human activity is common. However, the degree of human activity still can influence occurrence. Habitat available outside of the airport for the kestrel is not as abundant as for the fox; nevertheless, there are many open fields and woodland edge habitats available, further reducing the likelihood of combined use of the source areas.

At the FPTA and Southeast Runway Fuel Spill site, there were no EQ values indicating possible risk to the red fox or the kestrel. At the Waste Accumulation Area and Million Gallon Hill, there was no potential for risk to the red fox. The EQ for the kestrel at the Waste Accumulation Area indicated possible risk. However, as explained above, the habitat at the Waste Accumulation Area is of less quality for the kestrel than at other available areas. Therefore, given the limited acreage of fox and kestrel habitat for West Unit source areas, the lack of habitat for the kestrel at Million Gallon Hill, the higher quality habitats at the FPTA and the Southeast Runway Fuel Spill site, the availability of habitat outside of the Airport, and the lack of EQs in the possible risk category, it is unlikely that there is a significant degree of combined risk due to multiple source area utilization for these assessment endpoints.

Combined utilization for terrestrial assessment endpoints of Million Gallon Hill and the Waste Accumulation Area is possible for the red fox, meadow vole, and robin because the source areas are adjacent to each other, and the assessment endpoint home range sizes would allow contact with both source areas. As explained above, the kestrel is not likely to occur at Million Gallon Hill, precluding combined site impacts. No EQs were in the possible risk category for the red fox. Combined use of these sites for such a species that has a very large home range is likely to be minimal compared with the total habitat, thus minimizing the potential for combined use to cause potential risk.

For the meadow vole, EQs indicated possible risk for acenaphthene, benzo(a)anthracene, benzo(a)flouranthene, and benzo(g,h,i)perylene at Million Gallon Hill and the Southeast Runway Fuel Spill site. All of these chemicals also showed possible risk, except benzo(b)flouranthene, at the Waste Accumulation Area. As explained in Section 6.4 of Volume 1 and Section 2.4, risk to voles from PNAs at these sites in minimal due to the relatively low concentrations and the ability of vertebrates to readily metabolize these compounds. It is not likely that combined use of the Waste Accumulation Area, Million Gallon Hill, and the Southeast Runway Fuel Spill site would appreciably increase the potential for risk.

Combined site impacts to robins at the Waste Accumulation Area and Million Gallon Hill are possible for DDT, DDE, and DDD, which exhibited EQs above 1 for both sites. These chemicals were applied historically in the Galena area for pest control, and their presence at these two sites does not represent areas of elevated concentrations.

Multiple site exposure for aquatic and semiaquatic species is possible for those species utilizing multiple groundwater discharge areas. Groundwater discharge to surface waters of the Yukon River were modeled for the FPTA, POL Tank Farm, Waste Accumulation Area, Million

Gallon Hill, JP-4 Fillstands, Bldg.1845, CTDSA, and the Southeast Runway Fuel Spill site. Groundwater discharge for the FPTA is approximately 1.5 miles upstream from the discharge points for the remaining sites (Appendix C, Volume 3). Potential combined site impacts to Yukon River aquatic invertebrates at the discharge points are not likely. Also, it is not likely that potential migration of contaminants at the discharge points would significantly affect invertebrates downstream because of the low concentrations at the discharge points and subsequent dilution that would occur in route down stream.

There is a potential for combined impacts to aquatic invertebrates from groundwater discharging to the Yukon River mudflats/shoreline because the discharge points are either overlapping or adjacent to each other and comprise a high quality habitat (Appendix C, Volume 3). After consideration of toxic and physical properties and dilution effects of the river on chemicals with EQs greater than 1, it was determined that organochlorine pesticides were the primary chemicals that may pose risk to invertebrates of the mudflats (Section 6.4.7 of Volume 1). Additive concentrations of the discharging groundwater from various source areas were not evaluated in the groundwater model (Appendix C, Volume 3).

For the spotted sandpiper, utilization of the mudflats at the FPTA groundwater discharge point in conjunction with the discharge points of the POL Tank Farm and the West Unit areas is likely to be minimal because of the small home range size of the sandpiper (approximately 2.5 acres). Wading bird species with larger home ranges potentially could forage in both areas. However, the abundance of other wetland and mudflat habitat in the area reduces probability of combined use of these areas.

There is a significant likelihood of use by the spotted sandpiper of the POL Tank Farm and source areas of the West Unit groundwater discharge points (mudflats) because these are either overlapping or adjacent to each other (Appendix C, Volume 3). After consideration of toxic and physical properties and dilution effects of the river on chemicals with EQs greater than 1, it was determined that organochlorine pesticides were the primary chemicals that may pose potential risk to wading birds such as sandpipers at the mudflats (Section 6.4.7 of Volume 1). Additive concentrations of the discharging groundwater to the same vicinity were not considered in the groundwater model (Appendix C, Volume 3). Thus, the effect on potential mudflat concentrations is uncertain. The abundance of locally available wetland habitat for foraging would reduce the magnitude of a potential combined use effect.

Combined impacts from all groundwater discharge sources is possible for the northern pike because individuals of this species can range over large areas. However, the only EQ indicating possible risk to pike was the EQ for manganese. It was determined that this metal is not likely to pose risk because of dilution effects and the fact that it is an essential metabolic element. Thus, given that all other EQs were below 1 and that the exposure concentrations modeled did not account for dilution, impacts to the northern pike from combined sources would be minimal (i.e., productivity and population survivorship would not be reduced).

Section 5
CONCLUSIONS AND RECOMMENDATIONS

5.1 Human Health Assessment

For each scenario addressed in this risk assessment, the carcinogenic risk was estimated on a chemical-by-chemical basis for each relevant pathway of exposure. The estimated cancer risk was summed for each chemical associated with a specific pathway to determine total risk by pathway. To determine the total exposure scenario risk, total risks for all pathways were summed. A similar procedure was performed to determine the total noncancer HI for each exposure scenario.

The USEPA Superfund site remediation goal set forth in the NCP designates a cancer risk of 10^{-4} (1 in 10,000) to 10^{-6} (1 in one million). This range is designed to be protective of human health and to provide flexibility for consideration of other factors in risk management decisions. In effect, risks that are less than 10^{-6} are generally considered negligible. Risks that are greater than 10^{-4} are usually considered sufficient justification for undertaking remedial action. Risks in the intermediate range between these two values can be considered acceptable on a case-by-case basis. The State of Alaska plans to use a cancer risk level of 10^{-5} (1 in 100,000) in making risk management decisions (USAF, 1996b).

The HQ is not a statistical probability of a noncarcinogenic effect occurring. If the exposure level exceeds the appropriate toxicity value (i.e., the HQ is greater than one), there may be cause for concern regarding the potential noncarcinogenic effects. The Superfund site remediation goal for noncarcinogens is a total HI of 1 for chemicals with similar toxic endpoints.

Table 5-1 summarizes the chemicals and exposure pathways that contribute an estimated cancer risk greater than 1 in one million at the Southeast Runway Fuel Spill site and the CTDSA. The table specifies the applicable exposure scenario, the chemical-specific risk estimate, and the percent of the total risk, and provides summary comments to place the risk estimate in perspective. Of the numerous chemicals detected in environmental media at the two sites, only one chemical poses an estimated risk in excess of 1 in one million: beryllium in groundwater at the Southeast Runway Fuel Spill site. Estimated noncancer HIs are below 1, the Superfund site remediation goal for noncarcinogens, for all scenarios at both sites. An evaluation of combined impacts indicates that combining scenarios (e.g., child and adult) or adding individual site contributions to media at the same location does not substantially increase the estimated cancer risks or noncancer HIs.

Risks associated with residual petroleum at the sites are addressed by quantifying risks for individual chemicals that are components of the residual petroleum. The results of the risk assessment can be used to evaluate the need to remediate DRO and GRO, but are not intended to be used to establish alternate cleanup levels for DRO and GRO. Remediation issues related to DRO, GRO, and free product are to be addressed outside of the risk assessment.

It should be noted that the risk estimates presented address risks associated with the IRP sites under investigation and do not include risk associated with airport operations.

5.1.1 Southeast Runway Fuel Spill Site

Estimated incremental cancer risks for all scenarios except the current and future Old Town Galena residents are below 1 in one million, considered the *de minimis*, or level of

Table 5-1
Chemicals and Pathways that Contribute Estimated Cancer Risks Greater Than 1 in One Million

Chemical	Exposure Pathway	Exposure Scenario	Chemical- and Pathway-Specific Risk Estimate (% of Total Risk)	Comments
Southeast Runway Fuel Spill				
Beryllium	Ingestion of fruits and vegetables at gardens southwest of site (irrigated or subirrigated with shallow groundwater)	Current Old Town Galena Resident (Adult) - Average - Reasonable Maximum Current Old Town Galena Resident (Child) - Average - Reasonable Maximum	 3E-06 (97%) 3E-05 (97%) 4E-06 (97%) 1E-05 (97%)	Beryllium is a COPC in groundwater at the site because the background comparison concluded that average beryllium concentrations in groundwater at the site exceeded average beryllium concentrations in background groundwater. However, the level of confidence in this conclusion is rated as weak, based on the p-value of the comparison. Moreover, the maximum detected concentration in groundwater at the site (0.00394 mg/L) is lower than the calculated background UTL for beryllium in groundwater (0.005 mg/L). It is also lower than both the USEPA MCL and the MCLG for drinking water, which are both 0.004 mg/L. There is no reason to suspect that concentrations of beryllium in groundwater at this site might be elevated above background; although beryllium and beryllium alloys are sometimes used for various types of instrument springs, control parts, valves, and airplane carburetors and instruments, it is unlikely that these possible uses have resulted in elevated beryllium concentrations in groundwater at this site. Groundwater modeling methodology is conservative. It accounted only for horizontal, and not vertical, dispersion. The "source" was defined as 100 ft long with a concentration of 0.00394 mg/L (the maximum detected concentration). As a result, the modeled concentration at Old Town Galena was 0.00113 mg/L, a concentration higher than that detected at two of the four wells located at the site.
	Ingestion of fruits and vegetables at gardens in Old Town Galena (irrigated or subirrigated with shallow groundwater)	Future Old Town Galena Resident (Adult) - Average - Reasonable Maximum Future Old Town Galena Resident (Child) - Average - Reasonable Maximum	 1E-06 (5%) 1E-05 (8%) 2E-06 (8%) 5E-06 (15%)	

Table 5-1
(Continued)

Chemical	Exposure Pathway	Exposure Scenario	Chemical- and Pathway-Specific Risk Estimate (% of Total Risk)	Comments
Beryllium (Continued)	Ingestion of groundwater (as tap water)	Future Old Town Galena Resident (Adult) - Average - Reasonable Maximum Future Old Town Galena Resident (Child) - Average - Reasonable Maximum	 3E-05 (95%) 1E-04 (92%) 2E-05 (92%) 3E-05 (85%)	The methodology used to estimate uptake by fruits and vegetables from the groundwater is conservative. It assumes that 100% of water required by fruits and vegetables is supplied by shallow groundwater, either through irrigation or subirrigation. Most residents of Old Town Galena have drinking water trucked in from the city well in the New Town area, upgradient from Galena Airport. There are, however, at least seven private wells still in use in Old Town Galena.
Contral Tower Drum Storage Area, South				
None	--	--	--	--

negligible risk. Estimated risks for the current Old Town Galena resident range from an average of 3 in one million to a reasonable maximum of 3 in 100,000 for an adult and from 4 in one million to 1 in 100,000 for a child. These risk estimates are within the Superfund risk range goal for carcinogens of 1 in 10,000 to 1 in one million. Estimated risks for the future Old Town Galena resident range from an average of 3 in 100,000 to a reasonable maximum of 2 in 10,000 for an adult and from 2 in 100,00 to 3 in 100,000 for a child. The reasonable maximum estimate for the adult exceeds the high end of the Superfund risk range goal.

In the current Old Town Galena resident scenario, ingestion of fruits and vegetables that take up beryllium from the shallow groundwater (either through irrigation or subirrigation) at the location of the gardens southwest of the site contributes the majority of the risks (97%) in all cases. Risks associated with exposure to all other chemicals are negligible. Likewise, in the future Old Town Galena resident scenario, 99% of the estimated risk in all cases is attributable to beryllium in groundwater. Ingestion of groundwater containing beryllium contributes most (85-95%) of the estimated risk; ingestion of fruits and vegetables that take up beryllium from the shallow groundwater (either through irrigation or subirrigation) at gardens in Old Town Galena contributes risks that exceed 1 in one million in some cases. Again, risks associated with exposure to all other chemicals are negligible.

Beryllium is a COPC in groundwater at the site because the background comparison concluded that average beryllium concentrations in groundwater at the site exceeded average beryllium concentrations in background groundwater. However, the level of confidence in this conclusion is rated as weak, based on the p-value of the comparison (0.0630). Moreover, the maximum detected concentration in groundwater at the site (0.00394 mg/L) is lower than the calculated background UTL for beryllium in groundwater (0.005 mg/L). It is also lower than the USEPA MCL and MCLG for drinking water, which are both 0.004 mg/L. There is no reason to suspect that concentrations of beryllium in groundwater at this site might be elevated above background; although beryllium and beryllium alloys are sometimes used for various types of instrument springs, control parts, valves, and airplane carburetors and instruments, it is unlikely that these possible uses have resulted in elevated beryllium concentrations in groundwater at this site. Therefore, the estimated risks associated with exposure to beryllium at this site are probably no higher than risks from exposure to background concentrations of beryllium.

Moreover, the methodologies used to model the migration of beryllium in the groundwater from the Southeast Runway Fuel Spill site to Old Town Galena, and to estimate uptake by fruits and vegetables from groundwater, are conservative. The groundwater modeling accounted only for horizontal dispersion; vertical dispersion was ignored. The "source" was defined as 100 ft long with a concentration of 0.00394 mg/L (the maximum detected concentration). As a result, the modeled concentration at Old Town Galena (0.00113 mg/L) is higher than that detected at two of the four monitoring wells located at the site.

To calculate uptake by fruits and vegetables grown in gardens southwest of the site and in gardens in Old Town Galena, it was assumed that 100% of water required by the plants is supplied by shallow groundwater, either through irrigation or subirrigation. The depth of the groundwater fluctuates from very close to the surface to 15 to 20 ft below surface over the course of the year. It is unlikely that the roots of garden plants are in direct contact with the

groundwater (and thus are subirrigated) for a substantial portion of the growing season. It is more likely that precipitation and irrigation water from sources other than the shallow groundwater supply some or all of the water required.

Finally, most residents of Old Town Galena have drinking water trucked in from the city well in the New Town area, upgradient from Galena Airport. There are, however, at least seven private wells still in use in Old Town Galena (USAF, 1995b). Four of these wells, all less than 60 ft deep, were sampled in 1992 and 1993 as part of the RI. Results from beryllium were reported as ND; however, the detection limit was 0.002 mg/L.

If, as the evidence suggests, beryllium is not elevated above background in the groundwater at the Southeast Runway Fuel Spill site and it is removed as a COPC, the risks posed by the site are negligible for all human populations that might encounter site-related contaminants. Estimated risks associated with exposure to beryllium in the groundwater downgradient from the site are not significantly different from exposure to background concentrations of beryllium in the groundwater. On the basis of the results of the human health assessment, remedial action at the Southeast Runway Fuel Spill site is not warranted.

5.1.2 Control Tower Drum Storage Area, South

The estimated incremental cancer risks for all other scenarios at the CTDSA are below 1 in one million. Estimated noncancer HIs are well below 1 for all scenarios. On the basis of the results of the human health assessment, remedial action at the CTDSA is not warranted.

5.2 Ecological Assessment

Figures 5-1 and 5-2 summarize the weight of evidence findings for local populations of the assessment endpoint species of this ERA. A weight-of-evidence analysis of potential effects on assessment endpoint species was conducted by reviewing the physical, chemical, ecological, and toxicological properties of the COPECs with EQs above 1. More specifically these properties included:

- Physical and chemical properties:

  - environmental persistence;
  - mobility;
  - degradation products; and
  - bioavailability to ecological receptors.

- Toxicological properties:

  - toxic effects to wildlife;
  - likelihood of metabolism;
  - metabolic products; and
  - excretion time.

- Ecosystem properties:

  - ecosystem type;
  - ecosystem use;
  - habitat quality; and
  - habitat use.

The first two segments of this ERA, problem formulation and analysis, provided a forum for all of these characteristics, but a final review was conducted considering the EQ evaluation. Once all of the input parameters were presented, a rating was given to the COPEC for the assessment endpoint species with EQ values above 1. This rating (high, medium, or low) provides the initial guidance for the decision-making process.

5.2.1 Southeast Runway Fuel Spill Site

No EQ values above 1 were obtained in this ERA for the invertebrate, red fox, or kestrel. Results of the risk evaluation for plants

SOUTHEAST RUNWAY FUEL SPILL AREA
Potential Local Population Impacts

	LOW	MEDIUM	HIGH
Aquatic Invertebrates			
2-Methylnaphthalene	X		
Fluorene	X		
Terrestrial Plant			
Lead	X		
Meadow Vole			
Benzo(a)anthracene	X		
Benzo(a)pyrene	X		
Benzo(g,h,i)perylene	X		
Robin			
Benzo(b)fluoranthene	|——X	——|	
bis(2-ethylhexyl)phthalate	X		

Figure 5-1

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CONTROL TOWER DRUM STORAGE AREA
Potential Local Population Impacts

	LOW	MEDIUM	HIGH
Spotted Sandpiper			
DDE	×		

Figure 5-2

JVG0294 12/4/95

were inconclusive, except for lead. Given the extreme conservatism associated with the terrestrial TB, the low EQ (1.02) for plants, the lack of impacts to the higher trophic levels, and the site lead level being within the general background agricultural levels, adverse effects of lead on terrestrial plants are not expected. Several PNAs were noted in the meadow vole with EQs greater than 1 (benzo(a)anthracene, benzo(a)pyrene, and benzo(g,h,i)perylene). Although all of these EQs were greater than 1, they were also less than 10, and are categorized as indicating possible risk; however, the potential for risk from PNAs in this EQ category is likely to be insignificant because current data indicate that vertebrates metabolize PNAs (Eisler, 1987), or the PNAs remain bound to soil particles in the gastrointestinal tract and therefore are not accumulated. Owing to the low EQ levels of these PNAs, low concentrations of PNAs when compared with those at other sites, lack of impact to the red fox, and physical and biological processes that limit the vertebrate toxicity, the effects of PNAs on the mammals in the terrestrial ecosystem are expected to be minimal.

As with the plant toxicity, little soil invertebrate toxicity information was found. Several TBs were identified; however, none of the EQ results were above 1. Additionally, there were no EQs above 1 for the kestrel. For the robin, benzo(b)fluoranthene was the only contaminant evaluated with an EQ above 10 at 10.9. The only other chemical with an EQ above 1 for the robin was bis(2-ethylhexyl)phthalate, with an EQ of 1.09. As described above, the potential for risk from PNAs is likely to be insignificant because current data indicate that vertebrates metabolize PNAs (Eisler, 1987), or the PNAs remain bound to soil particles in the gastrointestinal tract and therefore are not accumulated (ATSDR, 1993). Information is limited on avian PNA toxicity. A "worst case" exposure is represented in this assessment by the TB. The applicability of this exposure route is dependent on several factors, including the form of the PNAs at the Southeast Runway Fuel Spill site and the use of the Southeast Runway Fuel Spill site as a breeding area for avian species. During the yearly flood, soil contaminants such as PNAs could be transported to the surface by the rising waters. These contaminated surface waters could potentially contact ecological receptors, especially as water accumulates at the dike. The Southeast Runway Fuel Spill site is vegetated with alders and other tall vegetation on the slope of the dike. Perching birds are commonly observed and nesting could occur in this vegetation. Because of the high quality of habitat along the dike, the propensity of birds, and possible transport and exposure mechanisms of contaminants to avian receptors, adverse impacts to avian receptors (especially eggs and young birds) could occur; however, the ability of vertebrate systems to metabolize PNAs and the strong adsorption of these compounds to soils limits the exposures and toxicities. Possible impacts on avian receptors at the Southeast Runway Fuel Spill site by PNAs are therefore given a medium rating.

The EQ for bis(2-ethylhexyl)phthalate in the robin was calculated to be 1.09. Bis(2-ethylhexyl)phthalate is bioconcentrated and the compound has been observed in invertebrates, fish and terrestrial organisms; however, accumulation of bis(2-ethylhexyl)phthalate is likely to be minimized by metabolism, and biomagnification in the food chain is not expected to occur. This has been confirmed by the detection of metabolites in animal tissues (ATSDR, 1991a). Because of the potential for metabolism of bis(2-ethylhexyl)phthalate, lack of adverse impacts to the kestrel, and low EQ in the robin, the effects of bis(2-ethylhexyl)phthalate to the avian ecosystem at the Southeast Runway Fuel Spill site are expected to be minimal.

The aquatic and semiaquatic exposure pathway considered groundwater beneath the Southeast Runway Fuel Spill site that potentially could migrate to the Yukon River, where exposure to the northern pike, aquatic invertebrates, and spotted sandpiper potentially could occur. None of the COPECs evaluated in this assessment showed an EQ above 1 for the northern pike or spotted sandpiper. AWQC were used as the measurement endpoints for evaluation of the northern pike and aquatic invertebrates when they existed. AWQC are highly conservative since they are designed to protect aquatic life. 2-Methylnaphthalene and fluorene are the only compounds with EQs greater than 1 for the aquatic invertebrate. PNAs vary substantially in their toxicity to aquatic organisms. In general, toxicity and bioconcentration factors tend to increase as molecular weight increases (Eisler, 1987). Fluorene and 2-methylnaphthalene are both low molecular weight PNAs, with molecular weight values of 166.2 and 142.2 respectively (ATSDR, 1993), indicating low potential for bioconcentration or toxicity. PNA levels in fish and higher trophic levels are usually low because they are rapidly metabolized (Eisler, 1987). Because of the low potential for bioconcentration or toxicity from low molecular weight PNAs and the ability of higher trophic levels to metabolize PNAs, the adverse impacts from fluorene and 2-methylnaphthalene are expected to be minimal.

The ERA indicates that impacts on perching birds, especially eggs and young, might occur due to the presence of PNAs in the surface soil. However, numerous birds have been noted at the site. Remediation of the groundwater is not required because of the lack of predicted impacts to ecological receptors at the shoreline.

5.2.2 Control Tower Drum Storage Area, South

This site evaluation considered groundwater beneath the CTDSA that potentially could migrate to the Yukon River, where exposure to the northern pike, aquatic invertebrate, and spotted sandpiper potentially could occur. Terrestrial receptors were not considered owing to the lack of habitat at the CTDSA. None of the COPECs evaluated in this assessment showed an EQ above 1 for the northern pike or aquatic invertebrate. AWQC were used as the measurement endpoints for these assessment endpoint species when they existed. AWQC are highly conservative since they are designed to protect most aquatic life. No dilution or volatility factors were applied to the discharged concentrations. 4,4'-DDE had an EQ value greater than 1(6.03) for the spotted sandpiper, indicating possible risk. There were no other COPECs noted to have EQs above 1 for the spotted sandpiper. DDT and its metabolites (DDE and DDD) are organochlorine pesticides that are recalcitrant and lipophilic compounds that can enter the food chain easily and progressively biomagnify to organisms at the top of the food chain, such as fish-eating birds. Because of the extensive past use of DDT worldwide, and the persistence of the compounds, these chemicals are virtually ubiquitous and are continually being transformed and redistributed in the environment. A steady state BCF of 12,000 for rainbow trout was applied to estimate the concentration in the aquatic invertebrate as the food for the spotted sandpiper. This value is based on ingestion of fish lower on the food chain and exposure to the surrounding media (i.e., water and sediment) (ATDSR, 1994). An analysis of the intake model for the spotted sandpiper indicates that 99% of the EQ contribution was from invertebrate ingestion and only 1% was from ingestion of water. Organochlorine pesticides such as DDT were used extensively at the Galena Airport for insect control. The CTDSA does not represent a unique source for DDT and its metabolites.

On the basis of the results of the ecological assessment, remedial action at the CTDSA is not warranted.

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APPENDIX 4A

STATISTICAL DETERMINATION OF CHEMICALS OF POTENTIAL CONCERN

APPENDIX 4A
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APPENDIX 4A
LIST OF TABLES

4A.1 INTRODUCTION

This appendix presents the results of the data evaluation performed to determine the chemicals of potential concern (COPCs) for use in the Galena Baseline Risk Assessment for the Southeast Runway Fuel Spill site (SE Runway) and the Control Tower Drum Storage Area, South (CTDSA).

COPCs were identified, in general, following the technical approaches described in Appendix A (Volume 2). COPCs were identified for both organic and inorganic analytes in soils and groundwater for the two sites that are the subject of this addendum. For this risk assessment, data were compiled from sampling efforts in 1994 and 1995. Soil data were divided into surface and subsurface classifications, using the same depth criteria described in Appendix A (Volume 2).

This appendix is divided into five sections. Section 4A.2 presents the COPCs identified for the CTDSA and the SE Runway. Section 4A.3 describes the technical approach used for this risk assessment, and Section 4A.4 gives results of the analyses performed. Lastly, references are in Section 4A.5. Additional tables with detailed results are given in Attachment 4A.1. The raw data used to determine COPCs is given in Attachment 4A.2. These attachments are included in the back of this appendix.

4A.2 SUMMARY

COPCs are chemicals that are positively identified as present at a site due to historical activities at the site. COPCs were determined using the statistical approach and procedures described in Appendix A (Volume 2) with minor modifications. The most significant change was that all 1994 and 1995 data were reported uncensored by the analytical laboratory for the CTDSA and SE Runway. The definition of "Occurrence" (as used to calculate "frequencies of occurrence" or "frequencies of detection") was redefined for 1994 as any result exceeding the upper tolerance limit for uncensored blank data; and for 1995 as any result not

flagged with a "B". The "B" flag indicated that the sample result was less than five times or ten times the maximum blank concentration for all blanks taken in 1995. The justification for this approach and other modifications are provided in this appendix.

Tables 4A-1 and 4A-2 give the possible COPCs for the CTDSA and SE Runway, respectively. The chemicals listed in these tables passed all the criteria to be retained as chemicals of potential concern per the USEPA definition (USEPA, 1989). They were subjected to additional screening before they were positively identified as COPCs for the human health evaluation or chemicals of potential ecological concern (COPECs).

4A.3 TECHNICAL APPROACH

The technical approach used to identify COPCs for this addendum uses the approach described in Appendix A (Volume 2) with minor modifications. The entire approach, including modifications, is described in this section.

COPCs were identified by a technical approach following the *Risk Assessment Guidance for Superfund Volume I Human Health Evaluation Manual* (USEPA, 1989). The evaluation to determine possible COPCs for the risk assessment is presented in Figure 3-2 in Volume 1 and includes the following steps as outlined in the USEPA guidance:

- Review raw data for representativeness;
- Review blank data;
- Compare site results to blank data;
- Perform comparisons between site and background concentrations for naturally occurring chemicals (i.e., inorganic chemicals).
- Calculate frequency of occurrence for site chemicals; and
- Calculate summary statistics for contaminants of potential concern.

Table 4A-1
Contaminants of Potential Concern for Control Tower Drum Storage Area(CTDSA)

Contaminants of Potential Concern		
Surface Soil	**Subsurface Soil**	**Groundwater**
2-Methylnaphthalene	2-Butanone(MEK)	1,2-Dichloroethane
4,4'-DDD	2-Methylnaphthalene	4,4'-DDE
4,4'-DDE	Acenaphthene	Aldrin
4,4'-DDT	Acetone	Dibromomethane
Aldrin	Benzene	Dieldrin
Anthracene	Diesel Range Organics	Diesel Range Organics
Antimony	Ethylbenzene	Endosulfan I
Benz(a)anthracene	Fluorene	Heptachlor
Benzo(a)pyrene	Gasoline Range Organics	Heptachlor epoxide
Benzo(b)fluoranthene	Naphthalene	Trichloroethene
Benzo(g,h,i)perylene	Phenanthrene	beta-BHC
Benzo(k)fluoranthene	Toluene	cis-1,2-Dichloroethene
Chrysene	bis(2-Ethylhexyl)phthalate	gamma-BHC(Lindane)
Dieldrin	m&p-Xylenes	m&p-Xylenes
Diesel Range Organics	o-Xylene	trans-1,2-Dichloroethene
Endosulfan I		
Endosulfan II		
Endrin aldehyde		
Fluoranthene		
Heptachlor		
Heptachlor epoxide		
Indeno(1,2,3-cd)pyrene		
Lead		
Phenanthrene		
Pyrene		
Thallium		
alpha-BHC		
bis(2-Ethylhexyl)phthalate		
delta-BHC		
gamma-BHC(Lindane)		

Table 4A-2
Contaminants of Potential Concern for Southeast Runway

Contaminants of Potential Concern		
Surface Soil	**Subsurface Soil**	**Groundwater**
2-Methylnaphthalene Anthracene Benz(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Benzo(g,h,i)perylene Benzo(k)fluoranthene Chrysene Dibenz(a,h)anthracene Diesel Range Organics Fluoranthene Indeno(1,2,3-cd)pyrene Lead Naphthalene Phenanthrene Pyrene bis(2-Ethylhexyl)phthalate	Not Sampled	1,2-Dichloroethane 2-Methylnaphthalene Acenaphthene Benzene Benzyl alcohol Beryllium Chloroethane Chloroform Chloromethane Dibutyl phthalate Diesel Range Organics Ethylbenzene Fluorene Gasoline Range Organics Naphthalene Phenanthrene Toluene Trichloroethene m&p-Xylenes o-Xylene

Each of these steps are described in the following subsections.

4A.3.1 Review Raw Data for Representativeness

The first step in the COPC identification process is to review the available raw data for applicability. The USEPA guidance states that all available data should be used to determine COPCs if the data are of sufficient and comparable quality and representative of site conditions. According to USEPA guidance, this data review process must include an evaluation of the following areas:

- Data available from historical site investigations;
- Analytical methods;
- Quantitation limits; and
- Data qualifiers.

Each of these steps in the data review process is addressed below.

4A.3.1.1 Review of Data Available from the Site Investigation

A number of samples have been collected at Galena Airport during the two sampling efforts in 1994 and 1995. Many of these samples were collected in order to characterize sites for a risk assessment. USEPA guidance allows the compilation of data from different sampling events as long as several criteria are met. These criteria are:

1. if sampling methods were similar;
2. if analytical methods were similar;
3. if QA/QC procedures and criteria were similar;
2. if concentrations were similar (i.e., significant changes did not occur to the site between sampling events).

These criteria were met for all data where samples were collected in support of the risk assessment. However, this does not mean that data from all the samples collected were used in this risk assessment.

Data for each site were reviewed to ensure that only data appropriate for a risk assessment were used to identify COPCs. Often measurements were analyzed for the same analyte by more than one method. Measurements that were analyzed by a more exact or more sensitive method were used for the risk assessment. Table 4A-3 presents the preferred analytical methods chosen for analytes where data were available from multiple methods.

4A.3.1.2 Analytical Methods

For each of the two investigations, the approved sampling and analysis plans were implemented successfully and data were generated using the planned analytical methods. Thus, data for these methods were deemed acceptable for use in this determination of COPCs.

4A.3.1.3 Quantitation Limits

The third step in the data review, as specified in the USEPA guidance, involves the evaluation of "quantitation limits" for all of the chemicals assessed at the site. All laboratory analyses meet the sensitivity requirements of the QA plan.

Additionally, uncensored data were reported for many of the inorganic and organic analyses. The reporting of uncensored data improves the project's ability to determine if low-level contamination can be discerned from system noise. Uncensored data means that all results are reported, even those results below the quantitation limit that would normally be censored and reported as "ND". This includes the use of negative results when they were reported for inorganic constituents. For some of the organic and inorganic analytes, the data are automatically censored by the laboratory even when uncensored data are requested. This happens for those methods that use electronic filtering mechanisms to eliminate signals below

Table 4A-3
Multiple Analytical Methods Identified

Analyte	Media	Method Used (Method Not Used) for Baseline Risk Assessment
Site = Control Tower Drum Storage Area		
1,2-Dichlorobenzene	Groundwater	SW8260 (SW8270)
1,3-Dichlorobenzene	Groundwater	SW8260 (SW8270)
1,4-Dichlorobenzene	Groundwater	SW8260 (SW8270)
Arsenic	Groundwater, Surface Soil	SW7421 (SW6010)
Lead	Groundwater, Surface Soil	SW7060 (SW6010)
Selenium	Surface Soil	SW7740 (SW6010)
Site = Southeast Runway		
Lead	Groundwater	SW7060 (SW6010)

a specified threshold (e.g., peak height, peak width, area reject). Proxy values were estimated for NDs using a uniform random number between 0 and the smaller of the minimum result and the MDL for each site and media, as described in Appendix A (Volume 2).

4A.3.1.4 Data Qualifiers or Codes

The fourth step in the data review process involves a review of data qualifiers or codes reported with the analytical results so that uncertainties can be identified and evaluated. All data that were validated during the QA/QC process were used to determine COPCs. This includes some data with qualifiers that indicate known identities, but uncertain concentrations. An additional step included during this phase of the risk assessment was a check if all results for an analyte in a specific matrix and site were KJ-flagged (a value that was not second column confirmed and was below the quantitation limit) or were not detected. If all results were KJ-flagged or were not detected, then the analyte was treated as if all results were not detected and the analyte was automatically eliminated as a COPC for that site and matrix.

4A.3.2 Review of Blank Data

Blank results can be used to evaluate the "noise" in the analytical system (field and laboratory components) to verify whether site concentrations were in fact greater than the analytical noise. For this phase of the program, upper tolerance limits (UTLs) established in the first phase of the program (Appendix A, Volume 2) for the 1994 sampling year were used for 1994 data: a site result greater than the blank UTL was considered a positive occurrence for that chemical. Blank results from the 1995 sampling year were used to set B-flags (B-flags identify those results that are due to analytical noise and do not indicate the presence of a chemical.). Since there were not enough blank results to accurately calculate UTLs for the 1995 data, the B-flags were used to identify analytical "noise". For 1995 data, a site result that was not B-flagged was considered a positive occurrence for that chemical. For more information about how B-flags were set, see the 1995 RI Report (USAF, 1995).

4A.3.3 Frequencies of Occurrence for Site Data

The third step in the COPC determination process was to compare the site data to the blank data to determine the potential for false-positive measurements because of laboratory or field contamination and to determine if target analytes occur frequently enough to be retained as a COPC. Frequencies of occurrence were calculated for each analyte, where a positive occurrence was any result from 1994 greater than the UTL for the blanks or any result from 1995 that was not B-flagged. Similar to the first phase of this risk assessment, analytes with positive occurrences less than five percent were considered separately based on detected results and applicable screening levels. Analytes with a frequency of occurrence greater than or equal to 5% for any site were retained as a COPC in the risk assessment. Inorganic analytes were further evaluated by comparing site results to background concentrations, as discussed in the next section.

4A.3.4 Comparison of Inorganic Site Concentrations to Naturally Occurring Background Levels

The fourth step in the COPC determination process was to compare site results to background levels for naturally occurring chemicals. A statistical "means comparison" was performed between site and background concentrations to determine if there was any evidence of metals contamination on the site. In addition, an "individuals comparison" was performed to determine the potential for a hot spot. A summary of the background data that were used for these comparisons and an overview of these two types of tests used can be found in the Appendix A (Volume 2).

4A.3.5 Calculate Summary Statistics for COPCs

The next step in the data analysis was to calculate summary statistics for those analytes determined to be possible COPCs (i.e., analytes retained through all the previously described steps). Measurement values for non-detect results were estimated by substituting

uniform random numbers between 0 and the smaller of the minimum result and the sample specific method detection limit for each site and for each matrix, analytical method, and analyte. Average site concentrations and the 95% upper confidence limit for the average were calculated for COPCs for each site. The upper confidence limit was calculated by strictly following USEPA guidance (USEPA, 1992c). Before calculating the 95% upper confidence limit, each set of results (by matrix, analytical method, and analyte) was tested with the Shapiro-Wilk test to determine whether the data set had a normal distribution, a log-normally distribution, or had neither distribution. Using the appropriate distribution, the 95% upper confidence limit was then calculated. For data that had neither distribution, a normal upper confidence limit was calculated. These summary statistics were used by the risk assessors to perform further screening of the COPCs as well as conduct risk assessments.

4A.4 RESULTS

This section presents the results of the data analyses performed to determine COPCs for the risk-based screen and the risk assessment. Results are presented for each of the following steps in the COPC determination process:

- Review blank data using previously determined upper tolerance limits for blanks in 1994 and using B-flags associated with 1995 data;
- Compare site results to appropriate blank information, and calculate a combined frequency of occurrence for site chemicals from both 1994 and 1995 sampling events;
- Perform comparisons between site and background concentrations for naturally occurring chemicals (i.e., inorganic chemicals) for all of the data.

Additionally, the summary statistics calculated for contaminants of potential concern are presented.

4A.4.1 Review of Blank Data

The Quality Assurance/Quality Control Summary reports for the respective years of sampling contain a discussion of the validity of the blank results and associated site results. Blank UTLs for 1994 that were previously calculated in the first phase of this risk assessment and the maximum B-flagged value for 1995 sampling data were used to represent the upper limit of measurements expected for the blank population (i.e., the upper limit of "noise" due to sampling or analysis activities). For 1994 sampling data, site results greater than the blank UTLs were concluded to indicate potential site contamination, and for 1995 sampling data, site results without a B-flag were concluded to indicate potential site contamination. Results, taken in 1994, less than the blank UTLs and results, taken in 1995, that have B-flags were concluded to be potentially analytical system noise and not indicative of site contamination.

4A.4.2 Frequencies of Occurrence for Site Data

The frequency of occurrence was calculated for each analyte, site, and matrix by determining the percent of results that exceeded the blank UTL for 1994 and were not B-flagged for 1995. These results are given in Attachment 4A, Table 1-1, for groundwater, and Table 2-1, for soils, for each site, respectively. In addition to the blank UTLs and the calculated frequencies of occurrence, these tables show the number of samples collected from each site and the range of site results (minimum and maximum). The tables also show whether or not the chemical was retained as a possible COPC and a footnote describing the reason a chemical was or was not retained as a possible COPC.

4A.4.3 Comparison of Inorganic Site Concentrations to Naturally Occurring Background Levels

As discussed in Section 4A.3.4, the fourth step in the COPC determination process was to compare concentrations of naturally occurring chemicals to background concentrations to determine if there is any evidence of metals contamination on the site due to

past practices. Section 4A.4.3.1 below, discusses tables of the background data that were used for these comparisons and Section 4A.4.3.2 gives the results of these comparisons.

4A.4.3.1 Characterization of Background Data

In the first phase of the risk assessment report (Volumes 1-3), Tables A-4 and A-5 in Appendix A give summary statistics (e.g., minimum, maximum, mean) for the water (groundwater) and soils (surface and subsurface) background data, respectively, for each metal. In addition to summary statistics, these tables show the number of samples collected and give information on the UTLs that were calculated for background. More information about background metals data can be found in Section 2 of the RI Report (USAF, 1995).

4A.4.3.2 Means and Individuals Comparisons of Inorganic Site Concentrations to Background

Tables with the results of the means and individuals comparisons for waters and soils are given in Attachments 4A.1, Table 1-2, for groundwater, and Table 2-2, for soils. These tables show the p-values (i.e., the probability that the two means come from the same parent population) for the tests of central tendency, the conclusion (S = statistically significant at the 0.20 alpha level, NS = not statistically significant at the 0.20 alpha level), the power of the test, and the type of statistical test performed (i.e., Student's t-Test or Wilcoxon test). The power of the test represents the probability of detecting a difference of 40% between the background mean and the site mean at the 80% confidence level. These criteria are recommended in the *Guidance for Data Useability in Risk Assessment* (EPA 1992a). They also show the background UTLs and the number of site results exceeding the UTLs (i.e., the results of the individual comparisons). The last two columns of these tables indicate whether or not it was listed as a possible COPC and a reason for this conclusion.

4A.4.4 Calculate Summary Statistics for COPCs

The next step in the data analysis was to calculate summary statistics for those analytes retained as possible COPCs throughout this process. Organic analytes that had a frequency of occurrence that was greater than or equal to 5% for a given site were initially identified as COPCs. Inorganic analytes that had a frequency of occurrence greater than or equal to 5% and had average concentrations that were significantly greater than background were also initially identified as COPCs. Any analyte that had a frequency of occurrence less than 5% was evaluated to determine if it should remain a possible COPC.

The following summary statistics were calculated for all analytes that were determined to be COPCs: minimum, maximum, mean, and 95% upper confidence limit for the mean. For censored data, proxy concentrations were estimated for values reported as ND by substituting a random uniform number between zero and the smaller of the minimum result or the MDL. This approach was used so that the proxy concentration was not biased high with respect to the sensitivity of the analytical measurement methods.

Table 1-3 and Table 2-3 in Attachment 4A.1 give summary statistics for possible COPCs for waters (groundwater) and soils (surface and subsurface soils), respectively.

4A.4.5 Raw Data

Raw data tables are provided in Attachment 4A.2 for groundwater, surface soil, and subsurface soil. These tables provide the data source, the lab sample id, the analytical method, the estimated concentration (measured value or proxy value if ND), and the MDL for that measurement.

4A.5 REFERENCES

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Attachment 4A-1

Summary Tables for Groundwater, Surface Soil, and Subsurface Soil

Groundwater Conclusions

Table 1-1
Galena Risk Assessment
Water Conclusions

---------------------------------- RISKTYPE=Quantitative Site=Control Tower DEPTH=Groundwater METHOD=Inorganics ----------------------------------

Analytical Method	Analyte	Units	N	Minimum	Maximum	Freq of Occ.(1)	UTL for Blank Data(2)	Chemical of Potential Concern?	Footnote
SW6010	Aluminum	mg/L	2	-0.0427	-0.0282	0.0	0.123514	No	e
SW6010	Antimony	mg/L	2	0.03	0.045	0.0	0.099209	No	e
SW7060	Arsenic	mg/L	2	-0.00145	-0.00007	0.0	0.001181	No	e
SW6010	Barium	mg/L	2	0.131	0.165	100.0	0.003513	No	c
SW6010	Beryllium	mg/L	2	-0.00163	-0.00053	0.0	0.0011	No	e
SW6010	Cadmium	mg/L	2	-0.00082	0.00039	0.0	0.002743	No	e
SW6010	Calcium	mg/L	2	164	190	100.0	0.278874	No	c
SW6010	Chromium	mg/L	2	-0.00207	0.00415	0.0	0.012021	No	e
SW6010	Cobalt	mg/L	2	-0.00365	-0.00182	0.0	0.015687	No	e
SW6010	Copper	mg/L	2	0.00529	0.023	50.0	0.014603	No	c
SW6010	Iron	mg/L	2	0.00124	0.00266	0.0	0.071749	No	e
SW7421	Lead	mg/L	2	-0.00066	0.00056	0.0	0.00447	No	e
SW6010	Magnesium	mg/L	2	31.9	36.9	100.0	0.096178	No	c
SW6010	Manganese	mg/L	2	-0.0006	0.00766	0.0	0.008636	No	e
SW6010	Molybdenum	mg/L	2	-0.00041	0.00581	0.0	0.020007	No	e
SW6010	Nickel	mg/L	2	0.00103	0.00311	0.0	0.035653	No	e
SW6010	Potassium	mg/L	2	3.56	5.16	100.0	1.48463	No	c
SW6010	Selenium	mg/L	2	-0.00931	0.059	0.0	0.11869	No	e
SW6010	Silver	mg/L	2	-0.00404	-0.00201	0.0	0.007836	No	e
SW6010	Sodium	mg/L	2	5.4	6.29	100.0	0.179325	No	c
SW6010	Thallium	mg/L	2	-0.0499	-0.0188	0.0	-0.0081	No	e

NC = Not calculated. UCL cannot be calculated with only one site result.

(1) Frequency of Occurrence is defined as the percent of results NOT b-flagged for 1995 data or results greater than blank UTLs for 1994 data

(2) Blank UTLs for 1994 data only.

Table 1-1
Galena Risk Assessment
Water Conclusions

----------------------------------- RISKTYPE=Quantitative Site=Control Tower DEPTH=Groundwater METHOD=Inorganics -----------------------------------
(continued)

Analytical Method	Analyte	Units	N	Minimum	Maximum	Freq of Occ.(1)	UTL for Blank Data(2)	Chemical of Potential Concern?	Footnote
SW6010	Vanadium	mg/L	2	-0.00241	0.00029	0.0	0.014126	No	e
SW6010	Zinc	mg/L	2	0.00936	0.0116	0.0	0.02998	No	e

N = 23

----------------------------------- RISKTYPE=Quantitative Site=Control Tower DEPTH=Groundwater METHOD=Organics -----------------------------------

Analytical Method	Analyte	Units	N	Minimum	Maximum	Freq of Occ.(1)	UTL for Blank Data(2)	Chemical of Potential Concern?	Footnote
SW8260	1,1,1,2-Tetrachloroethane	mg/L	2	ND	ND	0.0	NC	No	a
SW8260	1,1,1-Trichloroethane	mg/L	2	ND	ND	0.0	NC	No	a
SW8260	1,1,2,2-Tetrachloroethane	mg/L	2	ND	ND	0.0	NC	No	a
SW8260	1,1,2-Trichloroethane	mg/L	2	ND	ND	0.0	NC	No	a
SW8260	1,1-Dichloroethane	mg/L	2	ND	ND	0.0	NC	No	a

NC = Not calculated. UCL cannot be calculated with only one site result.

(1) Frequency of Occurrence is defined as the percent of results NOT b-flagged for 1995 data or results greater than blank UTLs for 1994 data

(2) Blank UTLs for 1994 data only.

Table 1-1
Galena Risk Assessment
Water Conclusions

RISKTYPE=Quantitative Site=Control Tower DEPTH=Groundwater METHOD=Organics
(continued)

Analytical Method	Analyte	Units	N	Minimum	Maximum	Freq of Occ.(1)	UTL for Blank Data(2)	Chemical of Potential Concern?	Footnote
SW8260	1,1-Dichloroethene	mg/L	2	ND	ND	0.0	NC	No	a
SW8260	1,2,3-Trichloropropane	mg/L	2	ND	ND	0.0	NC	No	a
SW8270	1,2,4-Trichlorobenzene	mg/L	2	ND	ND	0.0	NC	No	a
SW8260	1,2-Dichlorobenzene	mg/L	2	ND	ND	0.0	NC	No	a
SW8260	1,2-Dichloroethane	mg/L	2	0.00064	0.00064	50.0	NC	Yes	d
SW8260	1,2-Dichloropropane	mg/L	2	ND	ND	0.0	NC	No	a
SW8260	1,3-Dichlorobenzene	mg/L	2	ND	ND	0.0	NC	No	a
SW8260	1,4-Dichlorobenzene	mg/L	2	ND	ND	0.0	NC	No	a
SW8260	1-Chlorohexane	mg/L	2	ND	ND	0.0	NC	No	a
SW8270	2,4,5-Trichlorophenol	mg/L	2	ND	ND	0.0	NC	No	a
SW8270	2,4,6-Trichlorophenol	mg/L	2	ND	ND	0.0	NC	No	a
SW8270	2,4-Dichlorophenol	mg/L	2	ND	ND	0.0	NC	No	a
SW8270	2,4-Dimethylphenol	mg/L	2	ND	ND	0.0	NC	No	a
SW8270	2,4-Dinitrophenol	mg/L	2	ND	ND	0.0	NC	No	a
SW8270	2,4-Dinitrotoluene	mg/L	2	ND	ND	0.0	NC	No	a
SW8270	2,6-Dinitrotoluene	mg/L	2	ND	ND	0.0	NC	No	a
SW8260	2-Butanone(MEK)	mg/L	2	ND	ND	0.0	NC	No	a
SW8260	2-Chloroethyl vinyl ether	mg/L	2	ND	ND	0.0	NC	No	a
SW8270	2-Chloronaphthalene	mg/L	2	ND	ND	0.0	NC	No	a
SW8270	2-Chlorophenol	mg/L	2	ND	ND	0.0	NC	No	a

NC = Not calculated. UCL cannot be calculated with only one site result.

(1) Frequency of Occurrence is defined as the percent of results NOT b-flagged for 1995 data or results greater than blank UTLs for 1994 data

(2) Blank UTLs for 1994 data only.

Table 1-1
Galena Risk Assessment
Water Conclusions

------------------------------------ RISKTYPE=Quantitative Site=Control Tower DEPTH=Groundwater METHOD=Organics ------------------------------------
(continued)

Analytical Method	Analyte	Units	N	Minimum	Maximum	Freq of Occ.(1)	UTL for Blank Data(2)	Chemical of Potential Concern?	Footnote
SW8260	2-Hexanone	mg/L	2	ND	ND	0.0	0.00115	No	a
SW8270	2-Methylnaphthalene	mg/L	2	ND	ND	0.0	NC	No	a
SW8270	2-Methylphenol(o-cresol)	mg/L	2	ND	ND	0.0	NC	No	a
SW8270	2-Nitroaniline	mg/L	2	ND	ND	0.0	NC	No	a
SW8270	2-Nitrophenol	mg/L	2	ND	ND	0.0	NC	No	a
SW8270	3,3′-Dichlorobenzidine	mg/L	2	ND	ND	0.0	NC	No	a
SW8270	3-Nitroaniline	mg/L	2	ND	ND	0.0	NC	No	a
SW8080	4,4′-DDD	mg/L	2	ND	ND	0.0	NC	No	a
SW8080	4,4′-DDE	mg/L	2	5E-6	5E-6	50.0	NC	Yes	d
SW8080	4,4′-DDT	mg/L	2	0.000013	0.000013	50.0	NC	No	h
SW8270	4,6-Dinitro-2-methylphenol	mg/L	2	ND	ND	0.0	NC	No	a
SW8270	4-Bromophenyl phenyl ether	mg/L	2	ND	ND	0.0	NC	No	a
SW8270	4-Chloro-3-methylphenol	mg/L	2	ND	ND	0.0	NC	No	a
SW8270	4-Chloroaniline	mg/L	2	ND	ND	0.0	NC	No	a
SW8270	4-Chlorophenyl phenyl ether	mg/L	2	ND	ND	0.0	NC	No	a
SW8260	4-Methyl-2-pentanone(MIBK)	mg/L	2	ND	ND	0.0	NC	No	a
SW8270	4-Methylphenol/3-Methylphenol	mg/L	2	ND	ND	0.0	NC	No	a
SW8270	4-Nitroaniline	mg/L	2	ND	ND	0.0	NC	No	a
SW8270	4-Nitrophenol	mg/L	2	ND	ND	0.0	NC	No	a
SW8270	Acenaphthene	mg/L	2	ND	ND	0.0	NC	No	a

NC = Not calculated. UCL cannot be calculated with only one site result.
(1) Frequency of Occurrence is defined as the percent of results NOT b-flagged for 1995 data or results greater than blank UTLs for 1994 data
(2) Blank UTLs for 1994 data only.

Table 1-1
Galena Risk Assessment
Water Conclusions

---------------------------------- RISKTYPE=Quantitative Site=Control Tower DEPTH=Groundwater METHOD=Organics ----------------------------------
(continued)

Analytical Method	Analyte	Units	N	Minimum	Maximum	Freq of Occ.(1)	UTL for Blank Data(2)	Chemical of Potential Concern?	Footnote
SW8270	Acenaphthylene	mg/L	2	ND	ND	0.0	NC	No	a
SW8260	Acetone	mg/L	2	0.00594	0.00615	0.0	0.0149	No	e
SW8080	Aldrin	mg/L	2	0.000018	0.000018	50.0	NC	Yes	d
SW8270	Anthracene	mg/L	2	ND	ND	0.0	NC	No	a
SW8260	Benzene	mg/L	2	0.00005	0.00005	0.0	0.000137	No	e
SW8270	Benzo(a)anthracene	mg/L	2	ND	ND	0.0	NC	No	a
SW8270	Benzo(a)pyrene	mg/L	2	ND	ND	0.0	NC	No	a
SW8270	Benzo(b)fluoranthene	mg/L	2	ND	ND	0.0	NC	No	a
SW8270	Benzo(g,h,i)perylene	mg/L	2	ND	ND	0.0	NC	No	a
SW8270	Benzo(k)fluoranthene	mg/L	2	ND	ND	0.0	NC	No	a
SW8270	Benzoic acid	mg/L	2	ND	ND	0.0	NC	No	a
SW8270	Benzyl alcohol	mg/L	2	ND	ND	0.0	NC	No	a
SW8260	Bromobenzene	mg/L	2	ND	ND	0.0	NC	No	a
SW8260	Bromodichloromethane	mg/L	2	ND	ND	0.0	NC	No	a
SW8260	Bromomethane	mg/L	2	ND	ND	0.0	NC	No	a
SW8270	Butylbenzylphthalate	mg/L	2	ND	ND	0.0	NC	No	a
SW8260	Carbon disulfide	mg/L	2	ND	ND	0.0	NC	No	a
SW8260	Carbon tetrachloride	mg/L	2	ND	ND	0.0	NC	No	a
SW8080	Chlordane	mg/L	2	ND	ND	0.0	NC	No	a
SW8260	Chlorobenzene	mg/L	2	ND	ND	0.0	NC	No	a

NC = Not calculated. UCL cannot be calculated with only one site result.

(1) Frequency of Occurrence is defined as the percent of results NOT b-flagged for 1995 data or results greater than blank UTLs for 1994 data

(2) Blank UTLs for 1994 data only.

Table 1-1
Galena Risk Assessment
Water Conclusions

---------------------------------- RISKTYPE=Quantitative Site=Control Tower DEPTH=Groundwater METHOD=Organics ----------------------------------
(continued)

Analytical Method	Analyte	Units	N	Minimum	Maximum	Freq of Occ.(1)	UTL for Blank Data(2)	Chemical of Potential Concern?	Footnote
SW8260	Chloroethane	mg/L	2	ND	ND	0.0	NC	No	a
SW8260	Chloroform	mg/L	2	ND	ND	0.0	0.00085	No	a
SW8260	Chloromethane	mg/L	2	0.00031	0.00031	0.0	0.000435	No	e
SW8270	Chrysene	mg/L	2	ND	ND	0.0	NC	No	a
SW8270	Di-n-octylphthalate	mg/L	2	ND	ND	0.0	NC	No	a
SW8270	Dibenz(a,h)anthracene	mg/L	2	ND	ND	0.0	NC	No	a
SW8270	Dibenzofuran	mg/L	2	ND	ND	0.0	NC	No	a
SW8260	Dibromochloromethane	mg/L	2	ND	ND	0.0	NC	No	a
SW8260	Dibromomethane	mg/L	2	0.00021	0.00021	50.0	0.0002	Yes	d
SW8270	Dibutyl phthalate	mg/L	2	ND	ND	0.0	NC	No	a
SW8080	Dieldrin	mg/L	2	7.9E-6	7.9E-6	50.0	2.7E-6	Yes	d
AK102	Diesel Range Organics	mg/L	2	0	0.034	50.0	0.017	Yes	d
SW8270	Diethylphthalate	mg/L	2	ND	ND	0.0	NC	No	a
SW8270	Dimethylphthalate	mg/L	2	ND	ND	0.0	NC	No	a
SW8270	Diphenylamine (N-Nitrosodiphenylamine)	mg/L	2	ND	ND	0.0	NC	No	a
SW8080	Endosulfan I	mg/L	2	9.4E-6	9.4E-6	50.0	NC	Yes	d
SW8080	Endosulfan II	mg/L	2	ND	ND	0.0	NC	No	a
SW8080	Endosulfan sulfate	mg/L	2	3E-6	3.6E-6	100.0	NC	No	h
SW8080	Endrin	mg/L	2	ND	ND	0.0	NC	No	a
SW8080	Endrin aldehyde	mg/L	2	ND	ND	0.0	NC	No	a

NC = Not calculated. UCL cannot be calculated with only one site result.
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(2) Blank UTLs for 1994 data only.

Table 1-1
Galena Risk Assessment
Water Conclusions

----- RISKTYPE=Quantitative Site=Control Tower DEPTH=Groundwater METHOD=Organics -----
(continued)

Analytical Method	Analyte	Units	N	Minimum	Maximum	Freq of Occ.(1)	UTL for Blank Data(2)	Chemical of Potential Concern?	Footnote
SW8260	Ethylbenzene	mg/L	2	ND	ND	0.0	0.00005	No	a
SW8270	Fluoranthene	mg/L	2	ND	ND	0.0	NC	No	a
SW8270	Fluorene	mg/L	2	ND	ND	0.0	NC	No	a
AK101	Gasoline Range Organics	mg/L	2	0.009	0.01	0.0	0.027	No	e
SW8080	Heptachlor	mg/L	2	4E-7	3.3E-6	100.0	NC	Yes	d
SW8080	Heptachlor epoxide	mg/L	2	1E-7	0.000056	100.0	NC	Yes	d
SW8270	Hexachlorobenzene	mg/L	2	ND	ND	0.0	NC	No	a
SW8270	Hexachlorobutadiene	mg/L	2	ND	ND	0.0	NC	No	a
SW8270	Hexachlorocyclopentadiene	mg/L	2	ND	ND	0.0	NC	No	a
SW8270	Hexachloroethane	mg/L	2	ND	ND	0.0	NC	No	a
SW8270	Indeno(1,2,3-cd)pyrene	mg/L	2	ND	ND	0.0	NC	No	a
SW8270	Isophorone	mg/L	2	ND	ND	0.0	NC	No	a
SW8080	Methoxychlor	mg/L	2	5.8E-6	5.8E-6	50.0	NC	No	h
SW8260	Methylene chloride	mg/L	2	0.00018	0.00019	0.0	0.00283	No	e
SW8270	N-Nitrosodipropylamine	mg/L	2	ND	ND	0.0	NC	No	a
SW8270	Naphthalene	mg/L	2	ND	ND	0.0	NC	No	a
SW8270	Nitrobenzene	mg/L	2	ND	ND	0.0	NC	No	a
SW8080	PCB-1016	mg/L	2	ND	ND	0.0	NC	No	a
SW8080	PCB-1221	mg/L	2	ND	ND	0.0	NC	No	a
SW8080	PCB-1232	mg/L	2	ND	ND	0.0	NC	No	a

NC = Not calculated. UCL cannot be calculated with only one site result.
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(2) Blank UTLs for 1994 data only.

Table 1-1
Galena Risk Assessment
Water Conclusions

----- RISKTYPE=Quantitative Site=Control Tower DEPTH=Groundwater METHOD=Organics -----
(continued)

Analytical Method	Analyte	Units	N	Minimum	Maximum	Freq of Occ.(1)	UTL for Blank Data(2)	Chemical of Potential Concern?	Footnote
SW8080	PCB-1242	mg/L	2	ND	ND	0.0	NC	No	a
SW8080	PCB-1248	mg/L	2	ND	ND	0.0	NC	No	a
SW8080	PCB-1254	mg/L	2	ND	ND	0.0	NC	No	a
SW8080	PCB-1260	mg/L	2	ND	ND	0.0	NC	No	a
SW8270	Pentachlorophenol	mg/L	2	ND	ND	0.0	NC	No	a
SW8270	Phenanthrene	mg/L	2	ND	ND	0.0	NC	No	a
SW8270	Phenol	mg/L	2	ND	ND	0.0	NC	No	a
SW8270	Pyrene	mg/L	2	ND	ND	0.0	NC	No	a
SW8260	Styrene	mg/L	2	ND	ND	0.0	0.00005	No	a
SW8260	Tetrachloroethene	mg/L	2	ND	ND	0.0	NC	No	a
SW8260	Toluene	mg/L	2	0.00003	0.00013	0.0	0.000267	No	e
SW8080	Toxaphene	mg/L	2	ND	ND	0.0	NC	No	a
SW8260	Tribromomethane(Bromoform)	mg/L	2	ND	ND	0.0	NC	No	a
SW8260	Trichloroethene	mg/L	2	0.00033	0.00928	100.0	NC	Yes	d
SW8260	Trichlorofluoromethane	mg/L	2	ND	ND	0.0	NC	No	a
SW8260	Vinyl acetate	mg/L	2	ND	ND	0.0	NC	No	a
SW8260	Vinyl chloride	mg/L	2	ND	ND	0.0	NC	No	a
SW8080	alpha-BHC	mg/L	2	ND	ND	0.0	NC	No	a
SW8080	beta-BHC	mg/L	2	7.1E-6	7.1E-6	50.0	NC	Yes	d
SW8270	bis(2-Chloroethoxy)methane	mg/L	2	ND	ND	0.0	NC	No	a

NC = Not calculated. UCL cannot be calculated with only one site result.
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(2) Blank UTLs for 1994 data only.

Table 1-1
Galena Risk Assessment
Water Conclusions

------------------------------------ RISKTYPE=Quantitative Site=Control Tower DEPTH=Groundwater METHOD=Organics ------------------------------------
(continued)

Analytical Method	Analyte	Units	N	Minimum	Maximum	Freq of Occ.(1)	UTL for Blank Data(2)	Chemical of Potential Concern?	Footnote
SW8270	bis(2-Chloroethyl)ether	mg/L	2	ND	ND	0.0	NC	No	a
SW8270	bis(2-Chloroisopropyl)ether	mg/L	2	ND	ND	0.0	NC	No	a
SW8270	bis(2-Ethylhexyl)phthalate	mg/L	2	ND	ND	0.0	NC	No	a
SW8260	cis-1,2-Dichloroethene	mg/L	2	0.0233	0.0233	50.0	NC	Yes	d
SW8260	cis-1,3-Dichloropropene	mg/L	2	ND	ND	0.0	NC	No	a
SW8080	delta-BHC	mg/L	2	ND	ND	0.0	8.9E-6	No	a
SW8080	gamma-BHC(Lindane)	mg/L	2	0.000013	0.000013	50.0	NC	Yes	d
SW8260	m&p-Xylenes	mg/L	2	0.00007	0.00007	50.0	NC	Yes	d
SW8260	o-Xylene	mg/L	2	ND	ND	0.0	NC	No	a
SW8260	trans-1,2-Dichloroethene	mg/L	2	0.00133	0.00133	50.0	NC	Yes	d
SW8260	trans-1,3-Dichloropropene	mg/L	2	ND	ND	0.0	NC	No	a

N = 136

NC = Not calculated. UCL cannot be calculated with only one site result.

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(2) Blank UTLs for 1994 data only.

Table 1-1
Galena Risk Assessment
Water Conclusions

---------------------------------- RISKTYPE=Quantitative Site=Southeast Runway DEPTH=Groundwater METHOD=Inorganics ----------------------------------

Analytical Method	Analyte	Units	N	Minimum	Maximum	Freq of Occ.(1)	UTL for Blank Data(2)	Chemical of Potential Concern?	Footnote
SW6010	Aluminum	mg/L	4	-0.0291	0.0904	100.0	NC	No	c
SW6010	Antimony	mg/L	4	-0.103	0.00583	100.0	NC	No	c
SW6010	Arsenic	mg/L	4	-0.0326	0.032	100.0	NC	No	c
SW6010	Barium	mg/L	4	0.148	0.632	100.0	NC	No	c
SW6010	Beryllium	mg/L	4	0	0.00394	100.0	NC	Yes	b
SW6010	Cadmium	mg/L	4	0.00143	0.00851	0.0	NC	No	e
SW6010	Calcium	mg/L	4	87.6	217	100.0	NC	No	c
SW6010	Chromium	mg/L	4	0.00152	0.0022	100.0	NC	No	c
SW6010	Cobalt	mg/L	4	-0.00531	0.0228	100.0	NC	No	c
SW6010	Copper	mg/L	4	0	0.00714	100.0	NC	No	c
SW6010	Iron	mg/L	4	0.0107	22	50.0	NC	No	c
SW7421	Lead	mg/L	4	-0.00118	-0.00019	100.0	NC	No	c
SW6010	Magnesium	mg/L	4	9.68	63.7	100.0	NC	No	c
SW6010	Manganese	mg/L	4	0.0272	31.2	100.0	NC	No	c
SW6010	Molybdenum	mg/L	4	-0.0173	0.00877	100.0	NC	No	c
SW6010	Nickel	mg/L	4	-0.00697	0.0418	100.0	NC	No	c
SW6010	Potassium	mg/L	4	2.74	9.05	100.0	NC	No	c
SW6010	Selenium	mg/L	4	-0.0728	0.142	100.0	NC	No	c
SW6010	Silver	mg/L	4	-0.0043	-0.00082	100.0	NC	No	c
SW6010	Sodium	mg/L	4	1.43	11.4	100.0	NC	No	c
SW6010	Thallium	mg/L	4	-0.167	0.204	100.0	NC	No	c

NC = Not calculated. UCL cannot be calculated with only one site result.

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(2) Blank UTLs for 1994 data only.

Table 1-1
Galena Risk Assessment
Water Conclusions

-------------------------------- RISKTYPE=Quantitative Site=Southeast Runway DEPTH=Groundwater METHOD=Inorganics --------------------------------
(continued)

Analytical Method	Analyte	Units	N	Minimum	Maximum	Freq of Occ.(1)	UTL for Blank Data(2)	Chemical of Potential Concern?	Footnote
SW6010	Vanadium	mg/L	4	-0.00257	0.00346	100.0	NC	No	c
SW6010	Zinc	mg/L	4	-0.00463	0	100.0	NC	No	c

N = 23

-------------------------------- RISKTYPE=Quantitative Site=Southeast Runway DEPTH=Groundwater METHOD=Organics --------------------------------

Analytical Method	Analyte	Units	N	Minimum	Maximum	Freq of Occ.(1)	UTL for Blank Data(2)	Chemical of Potential Concern?	Footnote
SW8260	1,1,1,2-Tetrachloroethane	mg/L	4	ND	ND	0.0	NC	No	a
SW8260	1,1,1-Trichloroethane	mg/L	4	ND	ND	0.0	NC	No	a
SW8260	1,1,2,2-Tetrachloroethane	mg/L	4	ND	ND	0.0	NC	No	a
SW8260	1,1,2-Trichloroethane	mg/L	4	ND	ND	0.0	NC	No	a
SW8260	1,1-Dichloroethane	mg/L	4	ND	ND	0.0	NC	No	a

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(2) Blank UTLs for 1994 data only.

Table 1-1
Galena Risk Assessment
Water Conclusions

---------------------------------- RISKTYPE=Quantitative Site=Southeast Runway DEPTH=Groundwater METHOD=Organics ----------------------------------
(continued)

Analytical Method	Analyte	Units	N	Minimum	Maximum	Freq of Occ.(1)	UTL for Blank Data(2)	Chemical of Potential Concern?	Footnote
SW8260	1,1-Dichloroethene	mg/L	4	ND	ND	0.0	NC	No	a
SW8260	1,2,3-Trichloropropane	mg/L	4	ND	ND	0.0	NC	No	a
SW8270	1,2,4-Trichlorobenzene	mg/L	4	ND	ND	0.0	NC	No	a
SW8260	1,2-Dichlorobenzene	mg/L	4	ND	ND	0.0	NC	No	a
SW8260	1,2-Dichloroethane	mg/L	4	0.00107	0.00455	50.0	NC	Yes	d
SW8260	1,2-Dichloropropane	mg/L	4	ND	ND	0.0	NC	No	a
SW8260	1,3-Dichlorobenzene	mg/L	4	ND	ND	0.0	NC	No	a
SW8260	1,4-Dichlorobenzene	mg/L	4	ND	ND	0.0	NC	No	a
SW8260	1-Chlorohexane	mg/L	4	ND	ND	0.0	NC	No	a
SW8270	2,4,5-Trichlorophenol	mg/L	4	ND	ND	0.0	NC	No	a
SW8270	2,4,6-Trichlorophenol	mg/L	4	ND	ND	0.0	NC	No	a
SW8270	2,4-Dichlorophenol	mg/L	4	ND	ND	0.0	NC	No	a
SW8270	2,4-Dimethylphenol	mg/L	4	ND	ND	0.0	NC	No	a
SW8270	2,4-Dinitrophenol	mg/L	4	ND	ND	0.0	NC	No	a
SW8270	2,4-Dinitrotoluene	mg/L	4	ND	ND	0.0	NC	No	a
SW8270	2,6-Dinitrotoluene	mg/L	4	ND	ND	0.0	NC	No	a
SW8260	2-Butanone(MEK)	mg/L	4	ND	ND	0.0	NC	No	a
SW8260	2-Chloroethyl vinyl ether	mg/L	4	ND	ND	0.0	NC	No	a
SW8270	2-Chloronaphthalene	mg/L	4	ND	ND	0.0	NC	No	a
SW8270	2-Chlorophenol	mg/L	4	ND	ND	0.0	NC	No	a

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(2) Blank UTLs for 1994 data only.

Table 1-1
Galena Risk Assessment
Water Conclusions

---------------------------------- RISKTYPE=Quantitative Site=Southeast Runway DEPTH=Groundwater METHOD=Organics ----------------------------------
(continued)

Analytical Method	Analyte	Units	N	Minimum	Maximum	Freq of Occ.(1)	UTL for Blank Data(2)	Chemical of Potential Concern?	Footnote
SW8260	2-Hexanone	mg/L	4	ND	ND	0.0	NC	No	a
SW8270	2-Methylnaphthalene	mg/L	4	0.0989	0.0989	25.0	NC	Yes	d
SW8270	2-Methylphenol(o-cresol)	mg/L	4	ND	ND	0.0	NC	No	a
SW8270	2-Nitroaniline	mg/L	4	ND	ND	0.0	NC	No	a
SW8270	2-Nitrophenol	mg/L	4	ND	ND	0.0	NC	No	a
SW8270	3,3′-Dichlorobenzidine	mg/L	4	ND	ND	0.0	NC	No	a
SW8270	3-Nitroaniline	mg/L	4	ND	ND	0.0	NC	No	a
SW8270	4,6-Dinitro-2-methylphenol	mg/L	4	ND	ND	0.0	NC	No	a
SW8270	4-Bromophenyl phenyl ether	mg/L	4	ND	ND	0.0	NC	No	a
SW8270	4-Chloro-3-methylphenol	mg/L	4	ND	ND	0.0	NC	No	a
SW8270	4-Chloroaniline	mg/L	4	ND	ND	0.0	NC	No	a
SW8270	4-Chlorophenyl phenyl ether	mg/L	4	ND	ND	0.0	NC	No	a
SW8260	4-Methyl-2-pentanone(MIBK)	mg/L	4	ND	ND	0.0	NC	No	a
SW8270	4-Methylphenol/3-Methylphenol	mg/L	4	ND	ND	0.0	NC	No	a
SW8270	4-Nitroaniline	mg/L	4	ND	ND	0.0	NC	No	a
SW8270	4-Nitrophenol	mg/L	4	ND	ND	0.0	NC	No	a
SW8270	Acenaphthene	mg/L	4	0.000792	0.000792	25.0	NC	Yes	d
SW8270	Acenaphthylene	mg/L	4	ND	ND	0.0	NC	No	a
SW8260	Acetone	mg/L	4	0.00259	0.0135	0.0	NC	No	e
SW8270	Anthracene	mg/L	4	ND	ND	0.0	NC	No	a

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Table 1-1
Galena Risk Assessment
Water Conclusions

---------------------------------- RISKTYPE=Quantitative Site=Southeast Runway DEPTH=Groundwater METHOD=Organics ----------------------------------
(continued)

Analytical Method	Analyte	Units	N	Minimum	Maximum	Freq of Occ.(1)	UTL for Blank Data(2)	Chemical of Potential Concern?	Footnote
SW8260	Benzene	mg/L	4	0.000051	0.0581	50.0	NC	Yes	d
SW8270	Benzo(a)anthracene	mg/L	4	ND	ND	0.0	NC	No	a
SW8270	Benzo(a)pyrene	mg/L	4	ND	ND	0.0	NC	No	a
SW8270	Benzo(b)fluoranthene	mg/L	4	ND	ND	0.0	NC	No	a
SW8270	Benzo(g,h,i)perylene	mg/L	4	ND	ND	0.0	NC	No	a
SW8270	Benzo(k)fluoranthene	mg/L	4	ND	ND	0.0	NC	No	a
SW8270	Benzoic acid	mg/L	4	ND	ND	0.0	NC	No	a
SW8270	Benzyl alcohol	mg/L	4	0.00313	0.00313	25.0	NC	Yes	d
SW8260	Bromobenzene	mg/L	4	ND	ND	0.0	NC	No	a
SW8260	Bromodichloromethane	mg/L	4	ND	ND	0.0	NC	No	a
SW8260	Bromomethane	mg/L	4	ND	ND	0.0	NC	No	a
SW8270	Butylbenzylphthalate	mg/L	4	ND	ND	0.0	NC	No	a
SW8260	Carbon disulfide	mg/L	4	ND	ND	0.0	NC	No	a
SW8260	Carbon tetrachloride	mg/L	4	ND	ND	0.0	NC	No	a
SW8260	Chlorobenzene	mg/L	4	ND	ND	0.0	NC	No	a
SW8260	Chloroethane	mg/L	4	0.000059	0.000059	25.0	NC	Yes	d
SW8260	Chloroform	mg/L	4	0.000039	0.000039	25.0	NC	Yes	d
SW8260	Chloromethane	mg/L	4	0.00119	0.00119	25.0	NC	Yes	d
SW8270	Chrysene	mg/L	4	ND	ND	0.0	NC	No	a
SW8270	Di-n-octylphthalate	mg/L	4	ND	ND	0.0	NC	No	a

NC = Not calculated. UCL cannot be calculated with only one site result.

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(2) Blank UTLs for 1994 data only.

Table 1-1
Galena Risk Assessment
Water Conclusions

---------------------------------- RISKTYPE=Quantitative Site=Southeast Runway DEPTH=Groundwater METHOD=Organics ----------------------------------
(continued)

Analytical Method	Analyte	Units	N	Minimum	Maximum	Freq of Occ.(1)	UTL for Blank Data(2)	Chemical of Potential Concern?	Footnote
SW8270	Dibenz(a,h)anthracene	mg/L	4	ND	ND	0.0	NC	No	a
SW8270	Dibenzofuran	mg/L	4	ND	ND	0.0	NC	No	a
SW8260	Dibromochloromethane	mg/L	4	ND	ND	0.0	NC	No	a
SW8260	Dibromomethane	mg/L	4	0.000189	0.000559	0.0	NC	No	e
SW8270	Dibutyl phthalate	mg/L	4	0.000476	0.000476	25.0	NC	Yes	d
AK102	Diesel Range Organics	mg/L	4	0.33	9.3	100.0	NC	Yes	d
SW8270	Diethylphthalate	mg/L	4	ND	ND	0.0	NC	No	a
SW8270	Dimethylphthalate	mg/L	4	ND	ND	0.0	NC	No	a
SW8270	Diphenylamine (N-Nitrosodiphenylamine)	mg/L	4	ND	ND	0.0	NC	No	a
SW8260	Ethylbenzene	mg/L	4	0.000044	0.0216	50.0	NC	Yes	d
SW8270	Fluoranthene	mg/L	4	ND	ND	0.0	NC	No	a
SW8270	Fluorene	mg/L	4	0.00129	0.00129	25.0	NC	Yes	d
AK101	Gasoline Range Organics	mg/L	4	0.79	0.79	25.0	NC	Yes	d
SW8270	Hexachlorobenzene	mg/L	4	ND	ND	0.0	NC	No	a
SW8270	Hexachlorobutadiene	mg/L	4	ND	ND	0.0	NC	No	a
SW8270	Hexachlorocyclopentadiene	mg/L	4	ND	ND	0.0	NC	No	a
SW8270	Hexachloroethane	mg/L	4	ND	ND	0.0	NC	No	a
SW8270	Indeno(1,2,3-cd)pyrene	mg/L	4	ND	ND	0.0	NC	No	a
SW8270	Isophorone	mg/L	4	ND	ND	0.0	NC	No	a
SW8260	Methylene chloride	mg/L	4	0.00018	0.001	0.0	NC	No	e

NC = Not calculated. UCL cannot be calculated with only one site result.

(1) Frequency of Occurrence is defined as the percent of results NOT b-flagged for 1995 data or results greater than blank UTLs for 1994 data

(2) Blank UTLs for 1994 data only.

Table 1-1
Galena Risk Assessment
Water Conclusions

---------------------------------- RISKTYPE=Quantitative Site=Southeast Runway DEPTH=Groundwater METHOD=Organics ----------------------------------
(continued)

Analytical Method	Analyte	Units	N	Minimum	Maximum	Freq of Occ.(1)	UTL for Blank Data(2)	Chemical of Potential Concern?	Footnote
SW8270	N-Nitrosodipropylamine	mg/L	4	ND	ND	0.0	NC	No	a
SW8270	Naphthalene	mg/L	4	0.0807	0.0807	25.0	NC	Yes	d
SW8270	Nitrobenzene	mg/L	4	ND	ND	0.0	NC	No	a
SW8270	Pentachlorophenol	mg/L	4	ND	ND	0.0	NC	No	a
SW8270	Phenanthrene	mg/L	4	0.000739	0.000739	25.0	NC	Yes	d
SW8270	Phenol	mg/L	4	ND	ND	0.0	NC	No	a
SW8270	Pyrene	mg/L	4	ND	ND	0.0	NC	No	a
SW8260	Styrene	mg/L	4	ND	ND	0.0	NC	No	a
SW8260	Tetrachloroethene	mg/L	4	0.000029	0.00174	0.0	NC	No	e
SW8260	Toluene	mg/L	4	0.000195	0.006	100.0	NC	Yes	d
SW8260	Tribromomethane(Bromoform)	mg/L	4	ND	ND	0.0	NC	No	a
SW8260	Trichloroethene	mg/L	4	0.000021	0.000206	75.0	NC	Yes	d
SW8260	Trichlorofluoromethane	mg/L	4	ND	ND	0.0	NC	No	a
SW8260	Vinyl acetate	mg/L	4	ND	ND	0.0	NC	No	a
SW8260	Vinyl chloride	mg/L	4	ND	ND	0.0	NC	No	a
SW8270	bis(2-Chloroethoxy)methane	mg/L	4	ND	ND	0.0	NC	No	a
SW8270	bis(2-Chloroethyl)ether	mg/L	4	ND	ND	0.0	NC	No	a
SW8270	bis(2-Chloroisopropyl)ether	mg/L	4	ND	ND	0.0	NC	No	a
SW8270	bis(2-Ethylhexyl)phthalate	mg/L	4	ND	ND	0.0	NC	No	a
SW8260	cis-1,2-Dichloroethene	mg/L	4	ND	ND	0.0	NC	No	a

NC = Not calculated. UCL cannot be calculated with only one site result.
(1) Frequency of Occurrence is defined as the percent of results NOT b-flagged for 1995 data or results greater than blank UTLs for 1994 data
(2) Blank UTLs for 1994 data only.

Table 1-1
Galena Risk Assessment
Water Conclusions

---------------------------------- RISKTYPE=Quantitative Site=Southeast Runway DEPTH=Groundwater METHOD=Organics ----------------------------------
(continued)

Analytical Method	Analyte	Units	N	Minimum	Maximum	Freq of Occ.(1)	UTL for Blank Data(2)	Chemical of Potential Concern?	Footnote
SW8260	cis-1,3-Dichloropropene	mg/L	4	ND	ND	0.0	NC	No	a
SW8260	m&p-Xylenes	mg/L	4	0.000172	0.0284	50.0	NC	Yes	d
SW8260	o-Xylene	mg/L	4	0.0108	0.0108	25.0	NC	Yes	d
SW8260	trans-1,2-Dichloroethene	mg/L	4	ND	ND	0.0	NC	No	a
SW8260	trans-1,3-Dichloropropene	mg/L	4	ND	ND	0.0	NC	No	a

N = 110

NC = Not calculated. UCL cannot be calculated with only one site result.

(1) Frequency of Occurrence is defined as the percent of results NOT b-flagged for 1995 data or results greater than blank UTLs for 1994 data

(2) Blank UTLs for 1994 data only.

Definition of Footnotes

a. No measureable results on site.
b. Average metal concentration on site significantly greater than average background metal concentration (alpha = 0.20).
c. Average metal concentration on site not significantly greater than average background metal concentration (alpha = 0.20).
d. Frequency of occurrence >= 5%.
e. Frequency of occurrence < 5%.
f. No UTL for blanks was calculated and frequency of measureable results >= 5%.
g. No UTL for blanks was calculated and frequency of measureable results < 5%.
h. Results are either not detected or KJ-flagged.

Table 1-2
Galena Risk Assessment
Water Site Comparisons To Background

--- RISKTYPE=Quantitative Site=Control Tower DEPTH=Groundwater ---

Analytical Method	Analyte	Units	Bkgrd Detects	Bkgrd Mean	Bkgrd Max	Site Detects	Site Mean	Site Max	Test Type	P-Val for Test	Test Concl	Test Power (a)	UTL for Bkgrd (b)	N > UTL for Bkgrd
SW6010	Aluminum	mg/L	4/6	0.041547	0.057	2/2	-0.03545	-0.0282	t-Test	0.9479	NS	0.3296	0.241	0
SW6010	Antimony	mg/L	4/6	0.03153	0.0402	2/2	0.0375	0.045	t-Test	0.3453	NS	0.5056	0.100	0
SW7060	Arsenic	mg/L	5/6	0.004985	0.019	2/2	-0.00076	-0.00007	t-Test	0.8395	NS	0.3165	0.031	0
SW6010	Barium	mg/L	6/6	0.374167	0.537	2/2	0.148	0.165	t-Test	0.9631	NS	0.7071	0.893	0
SW6010	Beryllium	mg/L	4/6	0.000012	0.00052	2/2	-0.00108	-0.00053	t-Test	0.8415	NS	0.2013	0.005	0
SW6010	Cadmium	mg/L	4/6	0.000955	0.0009	2/2	-0.00022	0.00039	t-Test	0.8574	NS	0.3191	0.006	0
SW6010	Calcium	mg/L	6/6	231.3333	326	2/2	177	190	t-Test	0.8231	NS	0.7928	498.563	0
SW6010	Chromium	mg/L	4/6	0.00298	0.00357	2/2	0.00104	0.00415	t-Test	0.7998	NS	0.3811	0.011	0
SW6010	Cobalt	mg/L	5/6	0.018398	0.0375	2/2	-0.00274	-0.00182	t-Test	0.9333	NS	0.3992	0.079	0
SW6010	Copper	mg/L	4/6	0.006255	0.00824	2/2	0.014145	0.023	t-Test	0.2673	NS	0.3630	0.019	1
SW6010	Iron	mg/L	5/6	4.980275	18	2/2	0.00195	0.00266	t-Test	0.9307	NS	0.3201	30.662	0
SW7421	Lead	mg/L	6/6	0.000473	0.004	2/2	-0.00005	0.00056	t-Test	0.5913	NS	0.2245	0.011	0
SW6010	Magnesium	mg/L	6/6	47.45	73.6	2/2	34.4	36.9	t-Test	0.7811	NS	0.6293	125.328	0
SW6010	Manganese	mg/L	6/6	10.36728	23.1	2/2	0.00353	0.00766	t-Test	0.9783	NS	0.3936	45.351	0
SW6010	Molybdenum	mg/L	4/6	0.008	0.00356	2/2	0.0027	0.00581	t-Test	0.6910	NS	0.2967	0.058	0
SW6010	Nickel	mg/L	5/6	0.036132	0.102	2/2	0.00207	0.00311	t-Test	0.8597	NS	0.3618	0.179	0
SW6010	Potassium	mg/L	6/6	5.92	7.3	2/2	4.36	5.16	t-Test	0.9223	NS	0.9390	10.312	0
SW6010	Selenium	mg/L	4/6	0.051905	0.0217	2/2	0.024845	0.059	Wilcoxon	0.6848	NS	0.1805	0.022	1
SW6010	Silver	mg/L	4/6	0.001778	0.00499	2/2	-0.00303	-0.00201	t-Test	0.9346	NS	0.2775	0.015	0
SW6010	Sodium	mg/L	6/6	7.301667	11.3	2/2	5.845	6.29	t-Test	0.7561	NS	0.7237	17.051	0

S = one-tailed test statistically significant at the alpha = 0.20 significance level
NS = one-tailed test not statistically significant at the alpha = 0.20 significance level
(a) = Power to detect a difference of 40% between background and the site (alpha=0.20)
(b) = Upper tolerance limit for the 95th percentile for background at the 95% confidence level
* Background averages appear high due to proxies set at half the detection limit

Table 1-2
Galena Risk Assessment
Water Site Comparisons To Background

--- RISKTYPE=Quantitative Site=Control Tower DEPTH=Groundwater ---
(continued)

Analytical Method	Analyte	Units	Bkgrd Detects	Bkgrd Mean	Bkgrd Max	Site Detects	Site Mean	Site Max	Test Type	P-Val for Test	Test Concl	Test Power (a)	UTL for Bkgrd (b)	N > UTL for Bkgrd
SW6010	Thallium	mg/L	4/6	-0.01085	0.00008	2/2	-0.03435	-0.0188	t-Test	0.6957	NS	0.1740	0.202	0
SW6010	Vanadium	mg/L	4/6	0.003177	0.00341	2/2	-0.00106	0.00029	t-Test	0.8145	NS	0.2876	0.025	0
SW6010	Zinc	mg/L	4/6	0.011098	0.0193	2/2	0.01048	0.0116	t-Test	0.5505	NS	0.5318	0.034	0

N = 23

--- RISKTYPE=Quantitative Site=Southeast Runway DEPTH=Groundwater ---

Analytical Method	Analyte	Units	Bkgrd Detects	Bkgrd Mean	Bkgrd Max	Site Detects	Site Mean	Site Max	Test Type	P-Val for Test	Test Concl	Test Power (a)	UTL for Bkgrd (b)	N > UTL for Bkgrd
SW6010	Aluminum	mg/L	4/6	0.041547	0.057	4/4	0.016708	0.0904	t-Test	0.7560	NS	0.3571	0.241	0
SW6010	Antimony	mg/L	4/6	0.03153	0.0402	4/4	-0.05552	0.00583	t-Test	0.9977	NS	0.3849	0.100	0
SW6010	Arsenic	mg/L	4/6	0.049933	0.00809	4/4	0.005225	0.032	Wilcoxon	0.5000	NS	0.1671	0.008	3

S = one-tailed test statistically significant at the alpha = 0.20 significance level
NS = one-tailed test not statistically significant at the alpha = 0.20 significance level
(a) = Power to detect a difference of 40% between background and the site (alpha=0.20)
(b) = Upper tolerance limit for the 95th percentile for background at the 95% confidence level
* Background averages appear high due to proxies set at half the detection limit

Table 1-2
Galena Risk Assessment
Water Site Comparisons To Background

-- RISKTYPE=Quantitative Site=Southeast Runway DEPTH=Groundwater --
(continued)

Analytical Method	Analyte	Units	Bkgrd Detects	Bkgrd Mean	Bkgrd Max	Site Detects	Site Mean	Site Max	Test Type	P-Val for Test	Test Concl	Test Power (a)	UTL for Bkgrd (b)	N > UTL for Bkgrd
SW6010	Barium	mg/L	6/6	0.374167	0.537	4/4	0.28525	0.632	Wilcoxon	0.8645	NS	0.1991	0.893	0
SW6010	Beryllium	mg/L	4/6	0.000012	0.00052	4/4	0.001733	0.00394	t-Test	0.0630	S	0.2013	0.005	0
SW6010	Cadmium	mg/L	4/6	0.000955	0.0009	4/4	0.004353	0.00851	t-Test	0.0183	S	0.2856	0.006	1
SW6010	Calcium	mg/L	6/6	231.3333	326	4/4	161.65	217	t-Test	0.9272	NS	0.8943	498.563	0
SW6010	Chromium	mg/L	4/6	0.00298	0.00357	4/4	0.001755	0.0022	t-Test	0.8924	NS	0.5942	0.011	0
SW6010	Cobalt	mg/L	5/6	0.018398	0.0375	4/4	0.004813	0.0228	t-Test	0.9014	NS	0.4614	0.079	0
SW6010	Copper	mg/L	4/6	0.006255	0.00824	4/4	0.00306	0.00714	t-Test	0.9114	NS	0.6145	0.019	0
SW6010	Iron	mg/L	5/6	4.980275	18	4/4	5.53955	22	Wilcoxon	0.6218	NS	0.1770	30.662	0
SW7421	Lead	mg/L	6/6	0.000473	0.004	4/4	-0.00089	-0.00019	Wilcoxon	0.6965	NS	0.1824	0.011	0
SW6010	Magnesium	mg/L	6/6	47.45	73.6	4/4	37.82	63.7	t-Test	0.7452	NS	0.6870	125.328	0
SW6010	Manganese	mg/L	6/6	10.36728	23.1	4/4	7.9008	31.2	Wilcoxon	0.5413	NS	0.1717	45.351	0
SW6010	Molybdenum	mg/L	4/6	0.008	0.00356	4/4	-0.00433	0.00877	t-Test	0.9015	NS	0.3140	0.058	0
SW6010	Nickel	mg/L	5/6	0.036132	0.102	4/4	0.014683	0.0418	t-Test	0.8291	NS	0.4301	0.179	0
SW6010	Potassium	mg/L	6/6	5.92	7.3	4/4	5.185	9.05	t-Test	0.7071	NS	0.8276	10.312	0
SW6010	Selenium	mg/L	4/6	0.051905	0.0217	4/4	0.044675	0.142	Wilcoxon	0.5000	NS	0.1671	0.022	3
SW6010	Silver	mg/L	4/6	0.001778	0.00499	4/4	-0.00252	-0.00082	t-Test	0.9704	NS	0.3136	0.015	0
SW6010	Sodium	mg/L	6/6	7.301667	11.3	4/4	6.075	11.4	t-Test	0.7122	NS	0.6971	17.051	0
SW6010	Thallium	mg/L	4/6	-0.01085	0.00008	4/4	0.02095	0.204	t-Test	0.3233	NS	0.1827	0.202	1
SW6010	Vanadium	mg/L	4/6	0.003177	0.00341	4/4	0.000123	0.00346	t-Test	0.8213	NS	0.3283	0.025	0

S = one-tailed test statistically significant at the alpha = 0.20 significance level
NS = one-tailed test not statistically significant at the alpha = 0.20 significance level
(a) = Power to detect a difference of 40% between background and the site (alpha=0.20)
(b) = Upper tolerance limit for the 95th percentile for background at the 95% confidence level
* Background averages appear high due to proxies set at half the detection limit

Table 1-2
Galena Risk Assessment
Water Site Comparisons To Background

-- RISKTYPE=Quantitative Site=Southeast Runway DEPTH=Groundwater --
(continued)

Analytical Method	Analyte	Units	Bkgrd Detects	Bkgrd Mean	Bkgrd Max	Site Detects	Site Mean	Site Max	Test Type	P-Val for Test	Test Concl	Test Power (a)	UTL for Bkgrd (b)	N > UTL for Bkgrd
SW6010	Zinc	mg/L	4/6	0.011098	0.0193	4/4	-0.00168	0	t-Test	0.9977	NS	0.6849	0.034	0

N = 23

S = one-tailed test statistically significant at the alpha = 0.20 significance level
NS = one-tailed test not statistically significant at the alpha = 0.20 significance level
(a) = Power to detect a difference of 40% between background and the site (alpha=0.20)
(b) = Upper tolerance limit for the 95th percentile for background at the 95% confidence level
* Background averages appear high due to proxies set at half the detection limit

Table I-3
Galena Water COPCs
For Risk Assessments And Toxicity Screening

------------------------------------ RISKTYPE=Quantitative Site=Control Tower DEPTH=Groundwater METHOD=Organics ------------------------------------

Analytical Method	Analyte	Units	N	Detects	Minimum	Maximum	Distribution	Mean (a)	95% UCL (a,b)
SW8260	1,2-Dichloroethane	mg/L	2	1	0.00064	0.00064	Normal	3.28E-04	2.30E-03
SW8080	4,4'-DDE	mg/L	2	1	5E-6	5E-6	Normal	3.32E-06	1.39E-05
SW8080	Aldrin	mg/L	2	1	0.000018	0.000018	Normal	8.93E-06	6.43E-05
SW8260	Dibromomethane	mg/L	2	1	0.00021	0.00021	Normal	1.13E-04	7.26E-04
SW8080	Dieldrin	mg/L	2	1	7.9E-6	7.9E-6	Normal	5.25E-06	2.20E-05
AK102	Diesel Range Organics	mg/L	2	2	0	0.034	Normal	1.70E-02	1.24E-01
SW8080	Endosulfan I	mg/L	2	1	9.4E-6	9.4E-6	Normal	5.67E-06	2.92E-05
SW8080	Heptachlor	mg/L	2	2	4E-7	3.3E-6	Normal	1.85E-06	1.10E-05
SW8080	Heptachlor epoxide	mg/L	2	2	1E-7	0.000056	Normal	2.78E-05	2.03E-04
SW8260	Trichloroethene	mg/L	2	2	0.00033	0.00928	Normal	4.81E-03	3.31E-02
SW8080	beta-BHC	mg/L	2	1	7.1E-6	7.1E-6	Normal	3.61E-06	2.56E-05
SW8260	cis-1,2-Dichloroethene	mg/L	2	1	0.0233	0.0233	Normal	1.17E-02	8.51E-02
SW8080	gamma-BHC(Lindane)	mg/L	2	1	0.000013	0.000013	Normal	7.39E-06	4.47E-05
SW8260	m&p-Xylenes	mg/L	2	1	0.00007	0.00007	Normal	6.57E-05	9.26E-05
SW8260	trans-1,2-Dichloroethene	mg/L	2	1	0.00133	0.00133	Normal	6.84E-04	4.76E-03

N = 15

ND = Not detected.

NC = Not calculated. UCL cannot be calculated with only one site result.

NOTE: A mean associated with Log Normal data was calculated using a scale bias correction factor.

a. Random uniform numbers, between zero and the lesser of the minimum result and the detection limit, substituted for non-detected values.

b. One-sided 95% upper confidence limit for the mean.

Table 1-3
Galena Water COPCs
For Risk Assessments And Toxicity Screening

------------------------------- RISKTYPE=Quantitative Site=Southeast Runway DEPTH=Groundwater METHOD=Inorganics -------------------------------

Analytical Method	Analyte	Units	N	Detects	Minimum	Maximum	Distribution	Mean (a)	95% UCL (a,b)
SW6010	Beryllium	mg/L	4	4	0	0.00394	Normal	1.73E-03	3.99E-03

N = 1

------------------------------- RISKTYPE=Quantitative Site=Southeast Runway DEPTH=Groundwater METHOD=Organics -------------------------------

Analytical Method	Analyte	Units	N	Detects	Minimum	Maximum	Distribution	Mean (a)	95% UCL (a,b)
SW8260	1,2-Dichloroethane	mg/L	4	2	0.00107	0.00455	Normal	1.42E-03	3.94E-03
SW8270	2-Methylnaphthalene	mg/L	4	1	0.0989	0.0989	Log Normal	2.52E-02	1.07E+12
SW8270	Acenaphthene	mg/L	4	1	0.000792	0.000792	Normal	5.72E-04	8.33E-04
SW8260	Benzene	mg/L	4	2	0.000051	0.0581	Log Normal	1.45E-02	1.97E+31
SW8270	Benzyl alcohol	mg/L	4	1	0.00313	0.00313	Normal	1.04E-03	2.70E-03
SW8260	Chloroethane	mg/L	4	1	0.000059	0.000059	Normal	3.89E-05	6.29E-05
SW8260	Chloroform	mg/L	4	1	0.000039	0.000039	Normal	2.13E-05	3.67E-05
SW8260	Chloromethane	mg/L	4	1	0.00119	0.00119	Nonparametric	3.65E-04	1.02E-03

ND = Not detected.
NC = Not calculated. UCL cannot be calculated with only one site result.
NOTE: A mean associated with Log Normal data was calculated using a scale bias correction factor.
a. Random uniform numbers, between zero and the lesser of the minimum result and the detection limit, substituted for non-detected values.
b. One-sided 95% upper confidence limit for the mean.

Table 1-3
Galena Water COPCs
For Risk Assessments And Toxicity Screening

--------------------------------- RISKTYPE=Quantitative Site=Southeast Runway DEPTH=Groundwater METHOD=Organics ---------------------------------
(continued)

Analytical Method	Analyte	Units	N	Detects	Minimum	Maximum	Distribution	Mean (a)	95% UCL (a,b)
SW8270	Dibutyl phthalate	mg/L	4	1	0.000476	0.000476	Normal	2.23E-04	4.98E-04
AK102	Diesel Range Organics	mg/L	4	4	0.33	9.3	Log Normal	2.78E+00	3.78E+04
SW8260	Ethylbenzene	mg/L	4	2	0.000044	0.0216	Nonparametric	5.43E-03	1.81E-02
SW8270	Fluorene	mg/L	4	1	0.00129	0.00129	Normal	7.91E-04	1.31E-03
AK101	Gasoline Range Organics	mg/L	4	1	0.79	0.79	Log Normal	2.15E-01	1.50E+07
SW8270	Naphthalene	mg/L	4	1	0.0807	0.0807	Nonparametric	2.08E-02	6.78E-02
SW8270	Phenanthrene	mg/L	4	1	0.000739	0.000739	Normal	4.62E-04	7.79E-04
SW8260	Toluene	mg/L	4	4	0.000195	0.006	Nonparametric	1.66E-03	5.07E-03
SW8260	Trichloroethene	mg/L	4	3	0.000021	0.000206	Log Normal	6.58E-05	2.10E+04
SW8260	m&p-Xylenes	mg/L	4	2	0.000172	0.0284	Log Normal	7.16E-03	1.34E+18
SW8260	o-Xylene	mg/L	4	1	0.0108	0.0108	Nonparametric	2.80E-03	9.08E-03

N = 19

ND = Not detected.

NC = Not calculated. UCL cannot be calculated with only one site result.

NOTE: A mean associated with Log Normal data was calculated using a scale bias correction factor.

a. Random uniform numbers, between zero and the lesser of the minimum result and the detection limit, substituted for non-detected values.

b. One-sided 95% upper confidence limit for the mean.

Surface and Subsurface Soil Conclusions

Table 2-1
Galena Risk Assessment
Soil Conclusions

------------------------------------ RISKTYPE=Quantitative Site=Control Tower DEPTH=Surface METHOD=Inorganics ------------------------------------

Analytical Method	Analyte	Units	N	Minimum	Maximum	Freq of Occ.(1)	UTL for Blank Data(2)	Chemical of Potential Concern?	Footnote
SW6010	Aluminum	mg/kg	6	5510	11800	100.0	NC	No	c
SW6010	Antimony	mg/kg	6	12.9	49.2	100.0	NC	Yes	b
SW7060	Arsenic	mg/kg	6	3.37	11.7	100.0	NC	No	c
SW6010	Barium	mg/kg	6	74.9	192	100.0	NC	No	c
SW6010	Beryllium	mg/kg	6	0.0294	0.337	33.3	NC	No	c
SW6010	Cadmium	mg/kg	6	-1.18	-0.217	100.0	NC	No	c
SW6010	Calcium	mg/kg	6	3390	15400	100.0	NC	No	c
SW6010	Chromium	mg/kg	6	10.3	38.8	100.0	NC	No	c
SW6010	Cobalt	mg/kg	6	5	9.58	100.0	NC	No	c
SW6010	Copper	mg/kg	6	8.82	22.9	100.0	NC	No	c
SW6010	Iron	mg/kg	6	10200	21400	100.0	NC	No	c
SW7421	Lead	mg/kg	6	3.85	76.6	100.0	NC	Yes	b
SW6010	Magnesium	mg/kg	6	3080	7580	100.0	NC	No	c
SW6010	Manganese	mg/kg	6	187	406	100.0	NC	No	c
SW6010	Molybdenum	mg/kg	6	0.265	1.64	100.0	NC	No	c
SW6010	Nickel	mg/kg	6	12.8	27.8	100.0	NC	No	c
SW6010	Potassium	mg/kg	6	483	1270	100.0	NC	No	c
SW7740	Selenium	mg/kg	6	0.0712	0.593	100.0	NC	No	c
SW6010	Silver	mg/kg	6	-1.48	-0.669	100.0	NC	No	c
SW6010	Sodium	mg/kg	6	136	427	100.0	NC	No	c
SW6010	Thallium	mg/kg	6	-1.18	29.4	100.0	NC	Yes	b

NC = Not calculated. UCL cannot be calculated with only one site result.

(1) Frequency of Occurrence is defined as the percent of results NOT b-flagged for 1995 data or results greater than blank UTLs for 1994 data

(2) Blank UTLs for 1994 data only.

Table 2-1
Galena Risk Assessment
Soil Conclusions

------------------------------------ RISKTYPE=Quantitative Site=Control Tower DEPTH=Surface METHOD=Inorganics ------------------------------------
(continued)

Analytical Method	Analyte	Units	N	Minimum	Maximum	Freq of Occ.(1)	UTL for Blank Data(2)	Chemical of Potential Concern?	Footnote
SW6010	Vanadium	mg/kg	6	22.4	44.6	100.0	NC	No	c
SW6010	Zinc	mg/kg	6	25.8	57.5	100.0	NC	No	c

N = 23

------------------------------------ RISKTYPE=Quantitative Site=Control Tower DEPTH=Surface METHOD=Organics ------------------------------------

Analytical Method	Analyte	Units	N	Minimum	Maximum	Freq of Occ.(1)	UTL for Blank Data(2)	Chemical of Potential Concern?	Footnote
SW8240	1,1,1-Trichloroethane	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	1,1,2,2-Tetrachloroethane	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	1,1,2-Trichloroethane	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	1,1-Dichloroethane	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	1,1-Dichloroethene	mg/kg	6	ND	ND	0.0	NC	No	a

NC = Not calculated. UCL cannot be calculated with only one site result.

(1) Frequency of Occurrence is defined as the percent of results NOT b-flagged for 1995 data or results greater than blank UTLs for 1994 data

(2) Blank UTLs for 1994 data only.

Table 2-1
Galena Risk Assessment
Soil Conclusions

------------------------------------- RISKTYPE=Quantitative Site=Control Tower DEPTH=Surface METHOD=Organics -------------------------------------
(continued)

Analytical Method	Analyte	Units	N	Minimum	Maximum	Freq of Occ.(1)	UTL for Blank Data(2)	Chemical of Potential Concern?	Footnote
SW8270	1,2,4-Trichlorobenzene	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	1,2-Dichlorobenzene	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	1,2-Dichloroethane	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	1,2-Dichloropropane	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	1,3-Dichlorobenzene	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	1,4-Dichlorobenzene	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	2,4,5-Trichlorophenol	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	2,4,6-Trichlorophenol	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	2,4-Dichlorophenol	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	2,4-Dimethylphenol	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	2,4-Dinitrophenol	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	2,4-Dinitrotoluene	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	2,6-Dinitrotoluene	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	2-Butanone(MEK)	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	2-Chloroethyl vinyl ether	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	2-Chloronaphthalene	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	2-Chlorophenol	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	2-Hexanone	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	2-Methylnaphthalene	mg/kg	6	0.0217	0.0231	33.3	NC	Yes	d
SW8270	2-Methylphenol(o-cresol)	mg/kg	6	ND	ND	0.0	NC	No	a

NC = Not calculated. UCL cannot be calculated with only one site result.
(1) Frequency of Occurrence is defined as the percent of results NOT b-flagged for 1995 data or results greater than blank UTLs for 1994 data
(2) Blank UTLs for 1994 data only.

Table 2-1
Galena Risk Assessment
Soil Conclusions

------------------------------------- RISKTYPE=Quantitative Site=Control Tower DEPTH=Surface METHOD=Organics -------------------------------------
(continued)

Analytical Method	Analyte	Units	N	Minimum	Maximum	Freq of Occ.(1)	UTL for Blank Data(2)	Chemical of Potential Concern?	Footnote
SW8270	2-Nitroaniline	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	2-Nitrophenol	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	3,3'-Dichlorobenzidine	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	3-Nitroaniline	mg/kg	6	ND	ND	0.0	NC	No	a
SW8080	4,4'-DDD	mg/kg	6	0.00187	0.0301	100.0	NC	Yes	d
SW8080	4,4'-DDE	mg/kg	6	0.00186	0.00938	83.3	NC	Yes	d
SW8080	4,4'-DDT	mg/kg	6	0.00159	0.496	100.0	NC	Yes	d
SW8270	4,6-Dinitro-2-methylphenol	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	4-Bromophenyl phenyl ether	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	4-Chloro-3-methylphenol	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	4-Chloroaniline	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	4-Chlorophenyl phenyl ether	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	4-Methyl-2-pentanone(MIBK)	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	4-Methylphenol/3-Methylphenol	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	4-Nitroaniline	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	4-Nitrophenol	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	Acenaphthene	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	Acenaphthylene	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	Acetone	mg/kg	6	ND	ND	0.0	NC	No	a
SW8080	Aldrin	mg/kg	6	0.00066	0.00587	33.3	NC	Yes	d

NC = Not calculated. UCL cannot be calculated with only one site result.

(1) Frequency of Occurrence is defined as the percent of results NOT b-flagged for 1995 data or results greater than blank UTLs for 1994 data

(2) Blank UTLs for 1994 data only.

Table 2-1
Galena Risk Assessment
Soil Conclusions

------------------------------------- RISKTYPE=Quantitative Site=Control Tower DEPTH=Surface METHOD=Organics -------------------------------------
(continued)

Analytical Method	Analyte	Units	N	Minimum	Maximum	Freq of Occ.(1)	UTL for Blank Data(2)	Chemical of Potential Concern?	Footnote
SW8270	Anthracene	mg/kg	6	0.0211	0.0211	16.7	NC	Yes	d
SW8240	Benzene	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	Benzo(a)anthracene	mg/kg	6	0.077	0.077	16.7	NC	Yes	d
SW8270	Benzo(a)pyrene	mg/kg	6	0.0896	0.0896	16.7	NC	Yes	d
SW8270	Benzo(b)fluoranthene	mg/kg	6	0.15	0.15	16.7	NC	Yes	d
SW8270	Benzo(g,h,i)perylene	mg/kg	6	0.0777	0.0777	16.7	NC	Yes	d
SW8270	Benzo(k)fluoranthene	mg/kg	6	0.15	0.15	16.7	NC	Yes	d
SW8270	Benzoic acid	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	Benzyl alcohol	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	Bromodichloromethane	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	Bromomethane	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	Butylbenzylphthalate	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	Carbon disulfide	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	Carbon tetrachloride	mg/kg	6	ND	ND	0.0	NC	No	a
SW8080	Chlordane	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	Chlorobenzene	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	Chloroethane	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	Chloroform	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	Chloromethane	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	Chrysene	mg/kg	6	0.106	0.106	16.7	NC	Yes	d

NC = Not calculated. UCL cannot be calculated with only one site result.
(1) Frequency of Occurrence is defined as the percent of results NOT b-flagged for 1995 data or results greater than blank UTLs for 1994 data
(2) Blank UTLs for 1994 data only.

Table 2-1
Galena Risk Assessment
Soil Conclusions

------------------------------------- RISKTYPE=Quantitative Site=Control Tower DEPTH=Surface METHOD=Organics -------------------------------------
(continued)

Analytical Method	Analyte	Units	N	Minimum	Maximum	Freq of Occ.(1)	UTL for Blank Data(2)	Chemical of Potential Concern?	Footnote
SW8270	Di-n-octylphthalate	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	Dibenz(a,h)anthracene	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	Dibenzofuran	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	Dibromochloromethane	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	Dibutyl phthalate	mg/kg	6	ND	ND	0.0	NC	No	a
SW8080	Dieldrin	mg/kg	6	0.000818	0.0116	83.3	NC	Yes	d
AK102	Diesel Range Organics	mg/kg	6	5.8	500	83.3	NC	Yes	d
SW8270	Diethylphthalate	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	Dimethylphthalate	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	Diphenylamine (N-Nitrosodiphenylamine)	mg/kg	6	ND	ND	0.0	NC	No	a
SW8080	Endosulfan I	mg/kg	6	0.000206	0.00336	83.3	NC	Yes	d
SW8080	Endosulfan II	mg/kg	6	0.000063	0.000067	33.3	NC	Yes	d
SW8080	Endosulfan sulfate	mg/kg	6	0.00204	0.00204	16.7	NC	No	h
SW8080	Endrin	mg/kg	6	0.000548	0.00349	0.0	NC	No	e
SW8080	Endrin aldehyde	mg/kg	6	0.000267	0.00326	50.0	NC	Yes	d
SW8240	Ethylbenzene	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	Fluoranthene	mg/kg	6	0.201	0.201	16.7	NC	Yes	d
SW8270	Fluorene	mg/kg	6	ND	ND	0.0	NC	No	a
AK101	Gasoline Range Organics	mg/kg	6	ND	ND	0.0	NC	No	a
SW8080	Heptachlor	mg/kg	6	0.000171	0.00118	50.0	NC	Yes	d

NC = Not calculated. UCL cannot be calculated with only one site result.
(1) Frequency of Occurrence is defined as the percent of results NOT b-flagged for 1995 data or results greater than blank UTLs for 1994 data
(2) Blank UTLs for 1994 data only.

Table 2-1
Galena Risk Assessment
Soil Conclusions

------------------------------------- RISKTYPE=Quantitative Site=Control Tower DEPTH=Surface METHOD=Organics -------------------------------------
(continued)

Analytical Method	Analyte	Units	N	Minimum	Maximum	Freq of Occ.(1)	UTL for Blank Data(2)	Chemical of Potential Concern?	Footnote
SW8080	Heptachlor epoxide	mg/kg	6	0.00193	0.00263	33.3	NC	Yes	d
SW8270	Hexachlorobenzene	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	Hexachlorobutadiene	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	Hexachlorocyclopentadiene	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	Hexachloroethane	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	Indeno(1,2,3-cd)pyrene	mg/kg	6	0.068	0.068	16.7	NC	Yes	d
SW8270	Isophorone	mg/kg	6	ND	ND	0.0	NC	No	a
SW8080	Methoxychlor	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	Methylene chloride	mg/kg	6	0.000522	0.00146	0.0	NC	No	e
SW8270	N-Nitrosodipropylamine	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	Naphthalene	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	Nitrobenzene	mg/kg	6	ND	ND	0.0	NC	No	a
SW8080	PCB-1016	mg/kg	6	ND	ND	0.0	NC	No	a
SW8080	PCB-1221	mg/kg	6	ND	ND	0.0	NC	No	a
SW8080	PCB-1232	mg/kg	6	ND	ND	0.0	NC	No	a
SW8080	PCB-1242	mg/kg	6	ND	ND	0.0	NC	No	a
SW8080	PCB-1248	mg/kg	6	ND	ND	0.0	NC	No	a
SW8080	PCB-1254	mg/kg	6	ND	ND	0.0	NC	No	a
SW8080	PCB-1260	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	Pentachlorophenol	mg/kg	6	ND	ND	0.0	NC	No	a

NC = Not calculated. UCL cannot be calculated with only one site result.

(1) Frequency of Occurrence is defined as the percent of results NOT b-flagged for 1995 data or results greater than blank UTLs for 1994 data

(2) Blank UTLs for 1994 data only.

Table 2-1
Galena Risk Assessment
Soil Conclusions

------------------------------------ RISKTYPE=Quantitative Site=Control Tower DEPTH=Surface METHOD=Organics ------------------------------------
(continued)

Analytical Method	Analyte	Units	N	Minimum	Maximum	Freq of Occ.(1)	UTL for Blank Data(2)	Chemical of Potential Concern?	Footnote
SW8270	Phenanthrene	mg/kg	6	0.127	0.127	16.7	NC	Yes	d
SW8270	Phenol	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	Pyrene	mg/kg	6	0.184	0.184	16.7	NC	Yes	d
SW8240	Styrene	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	Tetrachloroethene	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	Toluene	mg/kg	6	ND	ND	0.0	NC	No	a
SW8080	Toxaphene	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	Tribromomethane(Bromoform)	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	Trichloroethene	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	Vinyl acetate	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	Vinyl chloride	mg/kg	6	ND	ND	0.0	NC	No	a
SW8080	alpha-BHC	mg/kg	6	0.00703	0.00703	16.7	NC	Yes	d
SW8080	beta-BHC	mg/kg	6	0.00361	0.00361	16.7	NC	No	h
SW8270	bis(2-Chloroethoxy)methane	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	bis(2-Chloroethyl)ether	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	bis(2-Chloroisopropyl)ether	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	bis(2-Ethylhexyl)phthalate	mg/kg	6	0.0938	0.0938	16.7	NC	Yes	d
SW8240	cis-1,2-Dichloroethene	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	cis-1,3-Dichloropropene	mg/kg	6	ND	ND	0.0	NC	No	a
SW8080	delta-BHC	mg/kg	6	0.00104	0.0103	33.3	NC	Yes	d

NC = Not calculated. UCL cannot be calculated with only one site result.

(1) Frequency of Occurrence is defined as the percent of results NOT b-flagged for 1995 data or results greater than blank UTLs for 1994 data

(2) Blank UTLs for 1994 data only.

Table 2-1
Galena Risk Assessment
Soil Conclusions

------------------------------------- RISKTYPE=Quantitative Site=Control Tower DEPTH=Surface METHOD=Organics -------------------------------------
(continued)

Analytical Method	Analyte	Units	N	Minimum	Maximum	Freq of Occ.(1)	UTL for Blank Data(2)	Chemical of Potential Concern?	Footnote
SW8080	gamma-BHC(Lindane)	mg/kg	6	0.00078	0.00601	33.3	NC	Yes	d
SW8240	m&p-Xylenes	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	o-Xylene	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	trans-1,2-Dichloroethene	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	trans-1,3-Dichloropropene	mg/kg	6	ND	ND	0.0	NC	No	a

N = 130

--------------------------------- RISKTYPE=Quantitative Site=Southeast Runway DEPTH=Subsurface METHOD=Inorganics ---------------------------------

Analytical Method	Analyte	Units	N	Minimum	Maximum	Freq of Occ.(1)	UTL for Blank Data(2)	Chemical of Potential Concern?	Footnote
SW7421	Lead	mg/kg	6	2.9	7.32	100.0	NC	No	c

N = 1

NC = Not calculated. UCL cannot be calculated with only one site result.
(1) Frequency of Occurrence is defined as the percent of results NOT b-flagged for 1995 data or results greater than blank UTLs for 1994 data
(2) Blank UTLs for 1994 data only.

Table 2-1
Galena Risk Assessment
Soil Conclusions

---------------------------------- RISKTYPE=Quantitative Site=Southeast Runway DEPTH=Subsurface METHOD=Organics ----------------------------------

Analytical Method	Analyte	Units	N	Minimum	Maximum	Freq of Occ.(1)	UTL for Blank Data(2)	Chemical of Potential Concern?	Footnote
SW8240	1,1,1-Trichloroethane	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	1,1,2,2-Tetrachloroethane	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	1,1,2-Trichloroethane	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	1,1-Dichloroethane	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	1,1-Dichloroethene	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	1,2,4-Trichlorobenzene	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	1,2-Dichlorobenzene	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	1,2-Dichloroethane	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	1,2-Dichloropropane	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	1,3-Dichlorobenzene	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	1,4-Dichlorobenzene	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	2,4,5-Trichlorophenol	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	2,4,6-Trichlorophenol	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	2,4-Dichlorophenol	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	2,4-Dimethylphenol	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	2,4-Dinitrophenol	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	2,4-Dinitrotoluene	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	2,6-Dinitrotoluene	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	2-Butanone(MEK)	mg/kg	6	0.0181	0.0609	33.3	NC	Yes	d
SW8240	2-Chloroethyl vinyl ether	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	2-Chloronaphthalene	mg/kg	6	ND	ND	0.0	NC	No	a

NC = Not calculated. UCL cannot be calculated with only one site result.

(1) Frequency of Occurrence is defined as the percent of results NOT b-flagged for 1995 data or results greater than blank UTLs for 1994 data

(2) Blank UTLs for 1994 data only.

Table 2-1
Galena Risk Assessment
Soil Conclusions

---------------------------------- RISKTYPE=Quantitative Site=Southeast Runway DEPTH=Subsurface METHOD=Organics ----------------------------------
(continued)

Analytical Method	Analyte	Units	N	Minimum	Maximum	Freq of Occ.(1)	UTL for Blank Data(2)	Chemical of Potential Concern?	Footnote
SW8270	2-Chlorophenol	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	2-Hexanone	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	2-Methylnaphthalene	mg/kg	6	0.0265	235	50.0	NC	Yes	d
SW8270	2-Methylphenol(o-cresol)	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	2-Nitroaniline	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	2-Nitrophenol	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	3,3'-Dichlorobenzidine	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	3-Nitroaniline	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	4,6-Dinitro-2-methylphenol	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	4-Bromophenyl phenyl ether	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	4-Chloro-3-methylphenol	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	4-Chloroaniline	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	4-Chlorophenyl phenyl ether	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	4-Methyl-2-pentanone(MIBK)	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	4-Methylphenol/3-Methylphenol	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	4-Nitroaniline	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	4-Nitrophenol	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	Acenaphthene	mg/kg	6	0.225	0.225	16.7	NC	Yes	d
SW8270	Acenaphthylene	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	Acetone	mg/kg	6	0.00315	0.175	66.7	NC	Yes	d

NC = Not calculated. UCL cannot be calculated with only one site result.
(1) Frequency of Occurrence is defined as the percent of results NOT b-flagged for 1995 data or results greater than blank UTLs for 1994 data
(2) Blank UTLs for 1994 data only.

Table 2-1
Galena Risk Assessment
Soil Conclusions

---------------------------------- RISKTYPE=Quantitative Site=Southeast Runway DEPTH=Subsurface METHOD=Organics ----------------------------------
(continued)

Analytical Method	Analyte	Units	N	Minimum	Maximum	Freq of Occ.(1)	UTL for Blank Data(2)	Chemical of Potential Concern?	Footnote
SW8270	Anthracene	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	Benzene	mg/kg	6	0.336	0.336	16.7	NC	Yes	d
SW8270	Benzo(a)anthracene	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	Benzo(a)pyrene	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	Benzo(b)fluoranthene	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	Benzo(g,h,i)perylene	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	Benzo(k)fluoranthene	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	Benzoic acid	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	Benzyl alcohol	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	Bromodichloromethane	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	Bromomethane	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	Butylbenzylphthalate	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	Carbon disulfide	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	Carbon tetrachloride	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	Chlorobenzene	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	Chloroethane	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	Chloroform	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	Chloromethane	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	Chrysene	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	Di-n-octylphthalate	mg/kg	6	ND	ND	0.0	NC	No	a

NC = Not calculated. UCL cannot be calculated with only one site result.
(1) Frequency of Occurrence is defined as the percent of results NOT b-flagged for 1995 data or results greater than blank UTLs for 1994 data
(2) Blank UTLs for 1994 data only.

Table 2-1
Galena Risk Assessment
Soil Conclusions

---------------------------------- RISKTYPE=Quantitative Site=Southeast Runway DEPTH=Subsurface METHOD=Organics ----------------------------------
(continued)

Analytical Method	Analyte	Units	N	Minimum	Maximum	Freq of Occ.(1)	UTL for Blank Data(2)	Chemical of Potential Concern?	Footnote
SW8270	Dibenz(a,h)anthracene	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	Dibenzofuran	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	Dibromochloromethane	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	Dibutyl phthalate	mg/kg	6	ND	ND	0.0	NC	No	a
AK102	Diesel Range Organics	mg/kg	6	26	18000	50.0	NC	Yes	d
SW8270	Diethylphthalate	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	Dimethylphthalate	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	Diphenylamine (N-Nitrosodiphenylamine)	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	Ethylbenzene	mg/kg	6	6.81	6.81	16.7	NC	Yes	d
SW8270	Fluoranthene	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	Fluorene	mg/kg	6	0.563	0.563	16.7	NC	Yes	d
AK101	Gasoline Range Organics	mg/kg	6	150	540	33.3	NC	Yes	d
SW8270	Hexachlorobenzene	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	Hexachlorobutadiene	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	Hexachlorocyclopentadiene	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	Hexachloroethane	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	Indeno(1,2,3-cd)pyrene	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	Isophorone	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	Methylene chloride	mg/kg	6	0.000472	0.00183	0.0	NC	No	e
SW8270	N-Nitrosodipropylamine	mg/kg	6	ND	ND	0.0	NC	No	a

NC = Not calculated. UCL cannot be calculated with only one site result.
(1) Frequency of Occurrence is defined as the percent of results NOT b-flagged for 1995 data or results greater than blank UTLs for 1994 data
(2) Blank UTLs for 1994 data only.

Table 2-1
Galena Risk Assessment
Soil Conclusions

RISKTYPE=Quantitative Site=Southeast Runway DEPTH=Subsurface METHOD=Organics
(continued)

Analytical Method	Analyte	Units	N	Minimum	Maximum	Freq of Occ.(1)	UTL for Blank Data(2)	Chemical of Potential Concern?	Footnote
SW8270	Naphthalene	mg/kg	6	0.0577	109	50.0	NC	Yes	d
SW8270	Nitrobenzene	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	Pentachlorophenol	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	Phenanthrene	mg/kg	6	0.232	0.232	16.7	NC	Yes	d
SW8270	Phenol	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	Pyrene	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	Styrene	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	Tetrachloroethene	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	Toluene	mg/kg	6	4.54	4.54	16.7	NC	Yes	d
SW8240	Tribromomethane(Bromoform)	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	Trichloroethene	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	Vinyl acetate	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	Vinyl chloride	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	bis(2-Chloroethoxy)methane	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	bis(2-Chloroethyl)ether	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	bis(2-Chloroisopropyl)ether	mg/kg	6	ND	ND	0.0	NC	No	a
SW8270	bis(2-Ethylhexyl)phthalate	mg/kg	6	0.047	0.047	16.7	NC	Yes	d
SW8240	cis-1,2-Dichloroethene	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	cis-1,3-Dichloropropene	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	m&p-Xylenes	mg/kg	6	0.0141	29.8	33.3	NC	Yes	d

NC = Not calculated. UCL cannot be calculated with only one site result.
(1) Frequency of Occurrence is defined as the percent of results NOT b-flagged for 1995 data or results greater than blank UTLs for 1994 data
(2) Blank UTLs for 1994 data only.

Table 2-1
Galena Risk Assessment
Soil Conclusions

RISKTYPE=Quantitative Site=Southeast Runway DEPTH=Subsurface METHOD=Organics
(continued)

Analytical Method	Analyte	Units	N	Minimum	Maximum	Freq of Occ.(1)	UTL for Blank Data(2)	Chemical of Potential Concern?	Footnote
SW8240	o-Xylene	mg/kg	6	0.00482	13.2	33.3	NC	Yes	d
SW8240	trans-1,2-Dichloroethene	mg/kg	6	ND	ND	0.0	NC	No	a
SW8240	trans-1,3-Dichloropropene	mg/kg	6	ND	ND	0.0	NC	No	a

N = 104

RISKTYPE=Quantitative Site=Southeast Runway DEPTH=Surface METHOD=Inorganics

Analytical Method	Analyte	Units	N	Minimum	Maximum	Freq of Occ.(1)	UTL for Blank Data(2)	Chemical of Potential Concern?	Footnote
SW7421	Lead	mg/kg	4	8.9	51.3	100.0	NC	Yes	b

N = 1

NC = Not calculated. UCL cannot be calculated with only one site result.

(1) Frequency of Occurrence is defined as the percent of results NOT b-flagged for 1995 data or results greater than blank UTLs for 1994 data

(2) Blank UTLs for 1994 data only.

Table 2-1
Galena Risk Assessment
Soil Conclusions

------------------------------------ RISKTYPE=Quantitative Site=Southeast Runway DEPTH=Surface METHOD=Organics ------------------------------------

Analytical Method	Analyte	Units	N	Minimum	Maximum	Freq of Occ.(1)	UTL for Blank Data(2)	Chemical of Potential Concern?	Footnote
SW8240	1,1,1-Trichloroethane	mg/kg	4	ND	ND	0.0	NC	No	a
SW8240	1,1,2,2-Tetrachloroethane	mg/kg	4	ND	ND	0.0	NC	No	a
SW8240	1,1,2-Trichloroethane	mg/kg	4	ND	ND	0.0	NC	No	a
SW8240	1,1-Dichloroethane	mg/kg	4	ND	ND	0.0	NC	No	a
SW8240	1,1-Dichloroethene	mg/kg	4	ND	ND	0.0	NC	No	a
SW8270	1,2,4-Trichlorobenzene	mg/kg	4	ND	ND	0.0	NC	No	a
SW8270	1,2-Dichlorobenzene	mg/kg	4	ND	ND	0.0	NC	No	a
SW8240	1,2-Dichloroethane	mg/kg	4	ND	ND	0.0	NC	No	a
SW8240	1,2-Dichloropropane	mg/kg	4	ND	ND	0.0	NC	No	a
SW8270	1,3-Dichlorobenzene	mg/kg	4	ND	ND	0.0	NC	No	a
SW8270	1,4-Dichlorobenzene	mg/kg	4	ND	ND	0.0	NC	No	a
SW8270	2,4,5-Trichlorophenol	mg/kg	4	ND	ND	0.0	NC	No	a
SW8270	2,4,6-Trichlorophenol	mg/kg	4	ND	ND	0.0	NC	No	a
SW8270	2,4-Dichlorophenol	mg/kg	4	ND	ND	0.0	NC	No	a
SW8270	2,4-Dimethylphenol	mg/kg	4	ND	ND	0.0	NC	No	a
SW8270	2,4-Dinitrophenol	mg/kg	4	ND	ND	0.0	NC	No	a
SW8270	2,4-Dinitrotoluene	mg/kg	4	ND	ND	0.0	NC	No	a
SW8270	2,6-Dinitrotoluene	mg/kg	4	ND	ND	0.0	NC	No	a
SW8240	2-Butanone(MEK)	mg/kg	4	ND	ND	0.0	NC	No	a
SW8240	2-Chloroethyl vinyl ether	mg/kg	4	ND	ND	0.0	NC	No	a
SW8270	2-Chloronaphthalene	mg/kg	4	ND	ND	0.0	NC	No	a

NC = Not calculated. UCL cannot be calculated with only one site result.
(1) Frequency of Occurrence is defined as the percent of results NOT b-flagged for 1995 data or results greater than blank UTLs for 1994 data
(2) Blank UTLs for 1994 data only.

Table 2-1
Galena Risk Assessment
Soil Conclusions

----- RISKTYPE=Quantitative Site=Southeast Runway DEPTH=Surface METHOD=Organics -----
(continued)

Analytical Method	Analyte	Units	N	Minimum	Maximum	Freq of Occ.(1)	UTL for Blank Data(2)	Chemical of Potential Concern?	Footnote
SW8270	2-Chlorophenol	mg/kg	4	ND	ND	0.0	NC	No	a
SW8240	2-Hexanone	mg/kg	4	ND	ND	0.0	NC	No	a
SW8270	2-Methylnaphthalene	mg/kg	4	0.0336	0.0336	25.0	NC	Yes	d
SW8270	2-Methylphenol(o-cresol)	mg/kg	4	ND	ND	0.0	NC	No	a
SW8270	2-Nitroaniline	mg/kg	4	ND	ND	0.0	NC	No	a
SW8270	2-Nitrophenol	mg/kg	4	ND	ND	0.0	NC	No	a
SW8270	3,3'-Dichlorobenzidine	mg/kg	4	ND	ND	0.0	NC	No	a
SW8270	3-Nitroaniline	mg/kg	4	ND	ND	0.0	NC	No	a
SW8270	4,6-Dinitro-2-methylphenol	mg/kg	4	ND	ND	0.0	NC	No	a
SW8270	4-Bromophenyl phenyl ether	mg/kg	4	ND	ND	0.0	NC	No	a
SW8270	4-Chloro-3-methylphenol	mg/kg	4	ND	ND	0.0	NC	No	a
SW8270	4-Chloroaniline	mg/kg	4	ND	ND	0.0	NC	No	a
SW8270	4-Chlorophenyl phenyl ether	mg/kg	4	ND	ND	0.0	NC	No	a
SW8240	4-Methyl-2-pentanone(MIBK)	mg/kg	4	ND	ND	0.0	NC	No	a
SW8270	4-Methylphenol/3-Methylphenol	mg/kg	4	ND	ND	0.0	NC	No	a
SW8270	4-Nitroaniline	mg/kg	4	ND	ND	0.0	NC	No	a
SW8270	4-Nitrophenol	mg/kg	4	ND	ND	0.0	NC	No	a
SW8270	Acenaphthene	mg/kg	4	ND	ND	0.0	NC	No	a
SW8270	Acenaphthylene	mg/kg	4	ND	ND	0.0	NC	No	a
SW8240	Acetone	mg/kg	4	ND	ND	0.0	NC	No	a

NC = Not calculated. UCL cannot be calculated with only one site result.

(1) Frequency of Occurrence is defined as the percent of results NOT b-flagged for 1995 data or results greater than blank UTLs for 1994 data

(2) Blank UTLs for 1994 data only.

Table 2-1
Galena Risk Assessment
Soil Conclusions

---------- RISKTYPE=Quantitative Site=Southeast Runway DEPTH=Surface METHOD=Organics ----------
(continued)

Analytical Method	Analyte	Units	N	Minimum	Maximum	Freq of Occ.(1)	UTL for Blank Data(2)	Chemical of Potential Concern?	Footnote
SW8270	Anthracene	mg/kg	4	0.0533	0.0533	25.0	NC	Yes	d
SW8240	Benzene	mg/kg	4	ND	ND	0.0	NC	No	a
SW8270	Benzo(a)anthracene	mg/kg	4	0.354	0.354	25.0	NC	Yes	d
SW8270	Benzo(a)pyrene	mg/kg	4	0.554	0.554	25.0	NC	Yes	d
SW8270	Benzo(b)fluoranthene	mg/kg	4	0.447	0.447	25.0	NC	Yes	d
SW8270	Benzo(g,h,i)perylene	mg/kg	4	0.212	0.212	25.0	NC	Yes	d
SW8270	Benzo(k)fluoranthene	mg/kg	4	0.461	0.461	25.0	NC	Yes	d
SW8270	Benzoic acid	mg/kg	4	ND	ND	0.0	NC	No	a
SW8270	Benzyl alcohol	mg/kg	4	ND	ND	0.0	NC	No	a
SW8240	Bromodichloromethane	mg/kg	4	ND	ND	0.0	NC	No	a
SW8240	Bromomethane	mg/kg	4	ND	ND	0.0	NC	No	a
SW8270	Butylbenzylphthalate	mg/kg	4	ND	ND	0.0	NC	No	a
SW8240	Carbon disulfide	mg/kg	4	ND	ND	0.0	NC	No	a
SW8240	Carbon tetrachloride	mg/kg	4	ND	ND	0.0	NC	No	a
SW8240	Chlorobenzene	mg/kg	4	ND	ND	0.0	NC	No	a
SW8240	Chloroethane	mg/kg	4	ND	ND	0.0	NC	No	a
SW8240	Chloroform	mg/kg	4	ND	ND	0.0	NC	No	a
SW8240	Chloromethane	mg/kg	4	ND	ND	0.0	NC	No	a
SW8270	Chrysene	mg/kg	4	0.515	0.515	25.0	NC	Yes	d
SW8270	Di-n-octylphthalate	mg/kg	4	ND	ND	0.0	NC	No	a

NC = Not calculated. UCL cannot be calculated with only one site result.
(1) Frequency of Occurrence is defined as the percent of results NOT b-flagged for 1995 data or results greater than blank UTLs for 1994 data
(2) Blank UTLs for 1994 data only.

Table 2-1
Galena Risk Assessment
Soil Conclusions

----- RISKTYPE=Quantitative Site=Southeast Runway DEPTH=Surface METHOD=Organics -----
(continued)

Analytical Method	Analyte	Units	N	Minimum	Maximum	Freq of Occ.(1)	UTL for Blank Data(2)	Chemical of Potential Concern?	Footnote
SW8270	Dibenz(a,h)anthracene	mg/kg	4	0.0947	0.0947	25.0	NC	Yes	d
SW8270	Dibenzofuran	mg/kg	4	ND	ND	0.0	NC	No	a
SW8240	Dibromochloromethane	mg/kg	4	ND	ND	0.0	NC	No	a
SW8270	Dibutyl phthalate	mg/kg	4	ND	ND	0.0	NC	No	a
AK102	Diesel Range Organics	mg/kg	4	110	250	100.0	NC	Yes	d
SW8270	Diethylphthalate	mg/kg	4	ND	ND	0.0	NC	No	a
SW8270	Dimethylphthalate	mg/kg	4	ND	ND	0.0	NC	No	a
SW8270	Diphenylamine (N-Nitrosodiphenylamine)	mg/kg	4	ND	ND	0.0	NC	No	a
SW8240	Ethylbenzene	mg/kg	4	ND	ND	0.0	NC	No	a
SW8270	Fluoranthene	mg/kg	4	0.435	0.435	25.0	NC	Yes	d
SW8270	Fluorene	mg/kg	4	ND	ND	0.0	NC	No	a
AK101	Gasoline Range Organics	mg/kg	4	ND	ND	0.0	NC	No	a
SW8270	Hexachlorobenzene	mg/kg	4	ND	ND	0.0	NC	No	a
SW8270	Hexachlorobutadiene	mg/kg	4	ND	ND	0.0	NC	No	a
SW8270	Hexachlorocyclopentadiene	mg/kg	4	ND	ND	0.0	NC	No	a
SW8270	Hexachloroethane	mg/kg	4	ND	ND	0.0	NC	No	a
SW8270	Indeno(1,2,3-cd)pyrene	mg/kg	4	0.24	0.24	25.0	NC	Yes	d
SW8270	Isophorone	mg/kg	4	ND	ND	0.0	NC	No	a
SW8240	Methylene chloride	mg/kg	4	0.000422	0.000649	0.0	NC	No	e
SW8270	N-Nitrosodipropylamine	mg/kg	4	ND	ND	0.0	NC	No	a

NC = Not calculated. UCL cannot be calculated with only one site result.

(1) Frequency of Occurrence is defined as the percent of results NOT b-flagged for 1995 data or results greater than blank UTLs for 1994 data

(2) Blank UTLs for 1994 data only.

Table 2-1
Galena Risk Assessment
Soil Conclusions

------------------------------------ RISKTYPE=Quantitative Site=Southeast Runway DEPTH=Surface METHOD=Organics ------------------------------------
(continued)

Analytical Method	Analyte	Units	N	Minimum	Maximum	Freq of Occ.(1)	UTL for Blank Data(2)	Chemical of Potential Concern?	Footnote
SW8270	Naphthalene	mg/kg	4	0.0225	0.0225	25.0	NC	Yes	d
SW8270	Nitrobenzene	mg/kg	4	ND	ND	0.0	NC	No	a
SW8270	Pentachlorophenol	mg/kg	4	ND	ND	0.0	NC	No	a
SW8270	Phenanthrene	mg/kg	4	0.149	0.149	25.0	NC	Yes	d
SW8270	Phenol	mg/kg	4	ND	ND	0.0	NC	No	a
SW8270	Pyrene	mg/kg	4	0.517	0.517	25.0	NC	Yes	d
SW8240	Styrene	mg/kg	4	ND	ND	0.0	NC	No	a
SW8240	Tetrachloroethene	mg/kg	4	ND	ND	0.0	NC	No	a
SW8240	Toluene	mg/kg	4	ND	ND	0.0	NC	No	a
SW8240	Tribromomethane(Bromoform)	mg/kg	4	ND	ND	0.0	NC	No	a
SW8240	Trichloroethene	mg/kg	4	ND	ND	0.0	NC	No	a
SW8240	Vinyl acetate	mg/kg	4	ND	ND	0.0	NC	No	a
SW8240	Vinyl chloride	mg/kg	4	ND	ND	0.0	NC	No	a
SW8270	bis(2-Chloroethoxy)methane	mg/kg	4	ND	ND	0.0	NC	No	a
SW8270	bis(2-Chloroethyl)ether	mg/kg	4	ND	ND	0.0	NC	No	a
SW8270	bis(2-Chloroisopropyl)ether	mg/kg	4	ND	ND	0.0	NC	No	a
SW8270	bis(2-Ethylhexyl)phthalate	mg/kg	4	0.0349	0.285	50.0	NC	Yes	d
SW8240	cis-1,2-Dichloroethene	mg/kg	4	ND	ND	0.0	NC	No	a
SW8240	cis-1,3-Dichloropropene	mg/kg	4	ND	ND	0.0	NC	No	a
SW8240	m&p-Xylenes	mg/kg	4	ND	ND	0.0	NC	No	a

NC = Not calculated. UCL cannot be calculated with only one site result.
(1) Frequency of Occurrence is defined as the percent of results NOT b-flagged for 1995 data or results greater than blank UTLs for 1994 data
(2) Blank UTLs for 1994 data only.

Table 2-1
Galena Risk Assessment
Soil Conclusions

------------------------------------ RISKTYPE=Quantitative Site=Southeast Runway DEPTH=Surface METHOD=Organics ------------------------------------
(continued)

Analytical Method	Analyte	Units	N	Minimum	Maximum	Freq of Occ.(1)	UTL for Blank Data(2)	Chemical of Potential Concern?	Footnote
SW8240	o-Xylene	mg/kg	4	ND	ND	0.0	NC	No	a
SW8240	trans-1,2-Dichloroethene	mg/kg	4	ND	ND	0.0	NC	No	a
SW8240	trans-1,3-Dichloropropene	mg/kg	4	ND	ND	0.0	NC	No	a

N = 104

NC = Not calculated. UCL cannot be calculated with only one site result.
(1) Frequency of Occurrence is defined as the percent of results NOT b-flagged for 1995 data or results greater than blank UTLs for 1994 data
(2) Blank UTLs for 1994 data only.

Definition of Footnotes

a. No measureable results on site.
b. Average metal concentration on site significantly greater than average background metal concentration (alpha = 0.20).
c. Average metal concentration on site not significantly greater than average background metal concentration (alpha = 0.20).
d. Frequency of occurrence >= 5%.
e. Frequency of occurrence < 5%.
f. No UTL for blanks was calculated and frequency of measureable results >= 5%.
g. No UTL for blanks was calculated and frequency of measureable results < 5%.
h. Results are either not detected or KJ-flagged.

Table 2-2

Galena Risk Assessment

Soil Site Comparisons To Background

--- RISKTYPE=Quantitative Site=Control Tower DEPTH=Surface ---

Analytical Method	Analyte	Units	Bkgrd Detects	Bkgrd Mean	Bkgrd Max	Site Detects	Site Mean	Site Max	Test Type	P-Val for Test	Test Concl	Test Power (a)	UTL for Bkgrd (b)	N > UTL for Bkgrd
SW6010	Aluminum	mg/kg	7/7	12057.143	14000	6/6	7581.667	11800.00	Wilcoxon	0.9702	NS	0.2246	14000.000	0
SW6010	Antimony	mg/kg	0/7	6.093	ND	6/6	29.367	49.20	t-Test	0.0023	S	0.3821	30.000	3
SW7060	Arsenic	mg/kg	7/7	11.457	15	6/6	6.680	11.70	Wilcoxon	0.9768	NS	0.2284	15.000	0
SW6010	Barium	mg/kg	7/7	187.143	250	6/6	116.233	192.00	t-Test	0.9841	NS	0.9562	380.133	0
SW6010	Beryllium	mg/kg	6/7	0.281	0.36	6/6	0.142	0.34	Wilcoxon	0.9613	NS	0.2197	0.360	0
SW6010	Cadmium	mg/kg	0/7	0.306	ND	6/6	-0.745	-0.22	t-Test	0.9998	NS	0.5548	1.480	0
SW6010	Calcium	mg/kg	7/7	12328.571	15000	6/6	6886.667	15400.00	Wilcoxon	0.9211	NS	0.2083	15000.000	1
SW6010	Chromium	mg/kg	7/7	25.100	30	6/6	19.250	38.80	Wilcoxon	0.8766	NS	0.2001	30.000	1
SW6010	Cobalt	mg/kg	7/7	11.857	14	6/6	7.465	9.58	Wilcoxon	0.9822	NS	0.2330	14.000	0
SW6010	Copper	mg/kg	7/7	28.529	37	6/6	12.603	22.90	Wilcoxon	0.9893	NS	0.2407	60.078	0
SW6010	Iron	mg/kg	7/7	22714.286	27000	6/6	14083.333	21400.00	Wilcoxon	0.9768	NS	0.2284	27000.000	0
SW7421	Lead	mg/kg	7/7	7.800	11	6/6	23.070	76.60	Wilcoxon	0.0999	S	0.1344	17.152	3
SW6010	Magnesium	mg/kg	7/7	7114.286	8700	6/6	4456.667	7580.00	Wilcoxon	0.9373	NS	0.2119	8700.000	0
SW6010	Manganese	mg/kg	7/7	405.714	540	6/6	259.667	406.00	t-Test	0.9893	NS	0.9816	766.957	0
SW6010	Molybdenum	mg/kg	0/7	3.064	ND	6/6	1.034	1.64	t-Test	1.0000	NS	0.9988	14.800	0
SW6010	Nickel	mg/kg	7/7	28.857	34	6/6	19.483	27.80	Wilcoxon	0.9767	NS	0.2280	34.000	0
SW6010	Potassium	mg/kg	7/7	1072.857	1600	6/6	719.167	1270.00	Wilcoxon	0.9007	NS	0.2040	2378.521	0
SW7740	Selenium	mg/kg	0/7	0.301	ND	6/6	0.282	0.59	t-Test	0.5866	NS	0.7723	1.480	0
SW6010	Silver	mg/kg	0/7	0.609	ND	6/6	-0.938	-0.67	Wilcoxon	0.9938	NS	0.2498	3.000	0
SW6010	Sodium	mg/kg	6/7	378.786	470	6/6	221.167	427.00	Wilcoxon	0.9505	NS	0.2156	470.000	0

S = one-tailed test statistically significant at the alpha = 0.20 significance level

NS = one-tailed test not statistically significant at the alpha = 0.20 significance level

(a) = Power to detect a difference of 40% between background and the site (alpha=0.20)

(b) = Upper tolerance limit for the 95th percentile for background at the 95% confidence level

* Background averages appear high due to proxies set at half the detection limit

Table 2-2
Galena Risk Assessment
Soil Site Comparisons To Background

RISKTYPE=Quantitative Site=Control Tower DEPTH=Surface
(continued)

Analytical Method	Analyte	Units	Bkgrd Detects	Bkgrd Mean	Bkgrd Max	Site Detects	Site Mean	Site Max	Test Type	P-Val for Test	Test Concl	Test Power (a)	UTL for Bkgrd (b)	N > UTL for Bkgrd
SW6010	Thallium	mg/kg	0/7	6.093	ND	6/6	15.020	29.40	t-Test	0.0734	S	0.3662	30.000	0
SW6010	Vanadium	mg/kg	7/7	41.286	48	6/6	29.817	44.60	Wilcoxon	0.9375	NS	0.2123	48.000	0
SW6010	Zinc	mg/kg	7/7	67.857	82	6/6	40.000	57.50	Wilcoxon	0.9765	NS	0.2276	82.000	0

N = 23

RISKTYPE=Quantitative Site=Southeast Runway DEPTH=Subsurface

Analytical Method	Analyte	Units	Bkgrd Detects	Bkgrd Mean	Bkgrd Max	Site Detects	Site Mean	Site Max	Test Type	P-Val for Test	Test Concl	Test Power (a)	UTL for Bkgrd (b)	N > UTL for Bkgrd
SW7421	Lead	mg/kg	4/4	9.025	10	6/6	4.390	7.32	Wilcoxon	0.9817	NS	0.2747	13.758	0

N = 1

S = one-tailed test statistically significant at the alpha = 0.20 significance level
NS = one-tailed test not statistically significant at the alpha = 0.20 significance level
(a) = Power to detect a difference of 40% between background and the site (alpha=0.20)
(b) = Upper tolerance limit for the 95th percentile for background at the 95% confidence level
* Background averages appear high due to proxies set at half the detection limit

Table 2-2
Galena Risk Assessment
Soil Site Comparisons To Background

-- RISKTYPE=Quantitative Site=Southeast Runway DEPTH=Surface --

Analytical Method	Analyte	Units	Bkgrd Detects	Bkgrd Mean	Bkgrd Max	Site Detects	Site Mean	Site Max	Test Type	P-Val for Test	Test Concl	Test Power (a)	UTL for Bkgrd (b)	N > UTL for Bkgrd
SW7421	Lead	mg/kg	7/7	7.800	11	4/4	27.300	51.3	t-Test	0.0729	S	0.3348	17.152	2

N = 1

S = one-tailed test statistically significant at the alpha = 0.20 significance level
NS = one-tailed test not statistically significant at the alpha = 0.20 significance level
(a) = Power to detect a difference of 40% between background and the site (alpha=0.20)
(b) = Upper tolerance limit for the 95th percentile for background at the 95% confidence level
* Background averages appear high due to proxies set at half the detection limit

Table 2-3
Galena Soil COPCs
For Risk Assessments And Toxicity Screening

------------------------------------ RISKTYPE=Quantitative Site=Control Tower DEPTH=Surface METHOD=Inorganics ------------------------------------

Analytical Method	Analyte	Units	N	Detects	Minimum	Maximum	Distribution	Mean (a)	95% UCL (a,b)
SW6010	Antimony	mg/kg	6	6	12.9	49.2	Normal	2.94E+01	3.90E+01
SW7421	Lead	mg/kg	6	6	3.85	76.6	Log Normal	2.19E+01	1.42E+02
SW6010	Thallium	mg/kg	6	6	-1.18	29.4	Normal	1.50E+01	2.55E+01

N = 3

------------------------------------ RISKTYPE=Quantitative Site=Control Tower DEPTH=Surface METHOD=Organics ------------------------------------

Analytical Method	Analyte	Units	N	Detects	Minimum	Maximum	Distribution	Mean (a)	95% UCL (a,b)
SW8270	2-Methylnaphthalene	mg/kg	6	2	0.0217	0.0231	Normal	1.65E-02	2.30E-02
SW8080	4,4'-DDD	mg/kg	6	6	0.00187	0.0301	Log Normal	1.32E-02	2.46E-01
SW8080	4,4'-DDE	mg/kg	6	5	0.00186	0.00938	Normal	4.87E-03	7.85E-03
SW8080	4,4'-DDT	mg/kg	6	6	0.00159	0.496	Log Normal	1.47E-01	1.27E+02
SW8080	Aldrin	mg/kg	6	5	0.00066	0.00587	Log Normal	2.26E-03	1.98E-02
SW8270	Anthracene	mg/kg	6	1	0.0211	0.0211	Log Normal	8.25E-03	1.73E-02

ND = Not detected.
NC = Not calculated. UCL cannot be calculated with only one site result.
NOTE: A mean associated with Log Normal data was calculated using a scale bias correction factor.
a. Random uniform numbers, between zero and the lesser of the minimum result and the detection limit, substituted for non-detected values.
b. One-sided 95% upper confidence limit for the mean.

Table 2-3
Galena Soil COPCs
For Risk Assessments And Toxicity Screening

------------------------------------ RISKTYPE=Quantitative Site=Control Tower DEPTH=Surface METHOD=Organics ------------------------------------
(continued)

Analytical Method	Analyte	Units	N	Detects	Minimum	Maximum	Distribution	Mean (a)	95% UCL (a,b)
SW8270	Benzo(a)anthracene	mg/kg	6	1	0.077	0.077	Nonparametric	2.33E-02	4.50E-02
SW8270	Benzo(a)pyrene	mg/kg	6	1	0.0896	0.0896	Log Normal	2.53E-02	9.72E-02
SW8270	Benzo(b)fluoranthene	mg/kg	6	1	0.15	0.15	Log Normal	2.60E-02	4.76E-01
SW8270	Benzo(g,h,i)perylene	mg/kg	6	1	0.0777	0.0777	Log Normal	2.45E-02	1.03E-01
SW8270	Benzo(k)fluoranthene	mg/kg	6	1	0.15	0.15	Log Normal	3.45E-02	3.22E-01
SW8270	Chrysene	mg/kg	6	1	0.106	0.106	Log Normal	4.50E-02	4.75E+01
SW8080	Dieldrin	mg/kg	6	5	0.000818	0.0116	Normal	4.15E-03	7.90E-03
AK102	Diesel Range Organics	mg/kg	6	5	5.8	500	Log Normal	1.17E+02	1.76E+05
SW8080	Endosulfan I	mg/kg	6	5	0.000206	0.00336	Log Normal	1.27E-03	6.40E-02
SW8080	Endosulfan II	mg/kg	6	2	0.000063	0.000067	Normal	3.87E-05	6.18E-05
SW8080	Endrin aldehyde	mg/kg	6	3	0.000267	0.00326	Log Normal	9.04E-04	1.64E-01
SW8270	Fluoranthene	mg/kg	6	1	0.201	0.201	Log Normal	3.88E-02	9.03E+02
SW8080	Heptachlor	mg/kg	6	3	0.000171	0.00118	Log Normal	2.36E-04	6.06E-03
SW8080	Heptachlor epoxide	mg/kg	6	2	0.00193	0.00263	Normal	9.31E-04	1.84E-03
SW8270	Indeno(1,2,3-cd)pyrene	mg/kg	6	1	0.068	0.068	Log Normal	2.00E-02	2.48E+01
SW8270	Phenanthrene	mg/kg	6	1	0.127	0.127	Log Normal	2.58E-02	6.30E-01
SW8270	Pyrene	mg/kg	6	1	0.184	0.184	Nonparametric	4.72E-02	1.02E-01
SW8080	alpha-BHC	mg/kg	6	1	0.00703	0.00703	Log Normal	2.29E-03	2.18E+00
SW8270	bis(2-Ethylhexyl)phthalate	mg/kg	6	1	0.0938	0.0938	Log Normal	2.75E-02	4.69E-01
SW8080	delta-BHC	mg/kg	6	2	0.00104	0.0103	Log Normal	2.22E-03	5.05E+03

ND = Not detected.
NC = Not calculated. UCL cannot be calculated with only one site result.
NOTE: A mean associated with Log Normal data was calculated using a scale bias correction factor.
a. Random uniform numbers, between zero and the lesser of the minimum result and the detection limit, substituted for non-detected values.
b. One-sided 95% upper confidence limit for the mean.

Table 2-3
Galena Soil COPCs
For Risk Assessments And Toxicity Screening

------------------------------------ RISKTYPE=Quantitative Site=Control Tower DEPTH=Surface METHOD=Organics ------------------------------------
(continued)

Analytical Method	Analyte	Units	N	Detects	Minimum	Maximum	Distribution	Mean (a)	95% UCL (a,b)
SW8080	gamma-BHC(Lindane)	mg/kg	6	2	0.00078	0.00601	Log Normal	1.14E-03	1.95E-01

N = 27

---------------------------------- RISKTYPE=Quantitative Site=Southeast Runway DEPTH=Subsurface METHOD=Organics ----------------------------------

Analytical Method	Analyte	Units	N	Detects	Minimum	Maximum	Distribution	Mean (a)	95% UCL (a,b)
SW8240	2-Butanone(MEK)	mg/kg	6	2	0.0181	0.0609	Log Normal	1.45E-02	6.52E-01
SW8270	2-Methylnaphthalene	mg/kg	6	3	0.0265	235	Log Normal	3.07E+01	7.99E+16
SW8270	Acenaphthene	mg/kg	6	1	0.225	0.225	Nonparametric	7.64E-02	1.53E-01
SW8240	Acetone	mg/kg	6	4	0.00315	0.175	Log Normal	6.80E-02	1.39E+03
SW8240	Benzene	mg/kg	6	1	0.336	0.336	Nonparametric	5.63E-02	1.69E-01
AK102	Diesel Range Organics	mg/kg	6	3	26	18000	Log Normal	6.05E+03	1.64E+18
SW8240	Ethylbenzene	mg/kg	6	1	6.81	6.81	Nonparametric	1.14E+00	3.42E+00

ND = Not detected.
NC = Not calculated. UCL cannot be calculated with only one site result.
NOTE: A mean associated with Log Normal data was calculated using a scale bias correction factor.
a. Random uniform numbers, between zero and the lesser of the minimum result and the detection limit, substituted for non-detected values.
b. One-sided 95% upper confidence limit for the mean.

Table 2-3
Galena Soil COPCs
For Risk Assessments And Toxicity Screening

---------------------------------- RISKTYPE=Quantitative Site=Southeast Runway DEPTH=Subsurface METHOD=Organics ----------------------------------
(continued)

Analytical Method	Analyte	Units	N	Detects	Minimum	Maximum	Distribution	Mean (a)	95% UCL (a,b)
SW8270	Fluorene	mg/kg	6	1	0.563	0.563	Nonparametric	1.76E-01	3.84E-01
AK101	Gasoline Range Organics	mg/kg	6	2	150	540	Log Normal	1.08E+02	1.61E+11
SW8270	Naphthalene	mg/kg	6	3	0.0577	109	Log Normal	1.78E+01	6.20E+15
SW8270	Phenanthrene	mg/kg	6	1	0.232	0.232	Log Normal	1.09E-01	6.17E+03
SW8240	Toluene	mg/kg	6	1	4.54	4.54	Nonparametric	7.57E-01	2.28E+00
SW8270	bis(2-Ethylhexyl)phthalate	mg/kg	6	1	0.047	0.047	Normal	2.70E-02	4.23E-02
SW8240	m&p-Xylenes	mg/kg	6	2	0.0141	29.8	Nonparametric	4.97E+00	1.50E+01
SW8240	o-Xylene	mg/kg	6	2	0.00482	13.2	Log Normal	3.68E-01	3.64E+15

N = 15

ND = Not detected.
NC = Not calculated. UCL cannot be calculated with only one site result.
NOTE: A mean associated with Log Normal data was calculated using a scale bias correction factor.
a. Random uniform numbers, between zero and the lesser of the minimum result and the detection limit, substituted for non-detected values.
b. One-sided 95% upper confidence limit for the mean.

Table 2-3
Galena Soil COPCs
For Risk Assessments And Toxicity Screening

RISKTYPE=Quantitative Site=Southeast Runway DEPTH=Surface METHOD=Inorganics

Analytical Method	Analyte	Units	N	Detects	Minimum	Maximum	Distribution	Mean (a)	95% UCL (a,b)
SW7421	Lead	mg/kg	4	4	8.9	51.3	Normal	2.73E+01	5.08E+01

N = 1

RISKTYPE=Quantitative Site=Southeast Runway DEPTH=Surface METHOD=Organics

Analytical Method	Analyte	Units	N	Detects	Minimum	Maximum	Distribution	Mean (a)	95% UCL (a,b)
SW8270	2-Methylnaphthalene	mg/kg	4	1	0.0336	0.0336	Normal	1.88E-02	3.12E-02
SW8270	Anthracene	mg/kg	4	1	0.0533	0.0533	Normal	2.23E-02	4.93E-02
SW8270	Benzo(a)anthracene	mg/kg	4	1	0.354	0.354	Normal	1.25E-01	3.13E-01
SW8270	Benzo(a)pyrene	mg/kg	4	1	0.554	0.554	Normal	1.94E-01	4.96E-01
SW8270	Benzo(b)fluoranthene	mg/kg	4	1	0.447	0.447	Normal	1.63E-01	4.04E-01
SW8270	Benzo(g,h,i)perylene	mg/kg	4	1	0.212	0.212	Normal	7.04E-02	1.83E-01
SW8270	Benzo(k)fluoranthene	mg/kg	4	1	0.461	0.461	Normal	1.77E-01	4.15E-01
SW8270	Chrysene	mg/kg	4	1	0.515	0.515	Log Normal	1.50E-01	8.26E+03

ND = Not detected.
NC = Not calculated. UCL cannot be calculated with only one site result.
NOTE: A mean associated with Log Normal data was calculated using a scale bias correction factor.
a. Random uniform numbers, between zero and the lesser of the minimum result and the detection limit, substituted for non-detected values.
b. One-sided 95% upper confidence limit for the mean.

Table 2-3
Galena Soil COPCs
For Risk Assessments And Toxicity Screening

------------------------------------ RISKTYPE=Quantitative Site=Southeast Runway DEPTH=Surface METHOD=Organics ------------------------------------
(continued)

Analytical Method	Analyte	Units	N	Detects	Minimum	Maximum	Distribution	Mean (a)	95% UCL (a,b)
SW8270	Dibenz(a,h)anthracene	mg/kg	4	1	0.0947	0.0947	Normal	5.58E-02	9.30E-02
AK102	Diesel Range Organics	mg/kg	4	4	110	250	Normal	1.58E+02	2.33E+02
SW8270	Fluoranthene	mg/kg	4	1	0.435	0.435	Log Normal	1.07E-01	2.28E+04
SW8270	Indeno(1,2,3-cd)pyrene	mg/kg	4	1	0.24	0.24	Normal	1.08E-01	2.40E-01
SW8270	Naphthalene	mg/kg	4	1	0.0225	0.0225	Normal	1.25E-02	2.51E-02
SW8270	Phenanthrene	mg/kg	4	1	0.149	0.149	Normal	7.90E-02	1.62E-01
SW8270	Pyrene	mg/kg	4	1	0.517	0.517	Log Normal	1.48E-01	5.41E+06
SW8270	bis(2-Ethylhexyl)phthalate	mg/kg	4	2	0.0349	0.285	Log Normal	8.31E-02	4.01E+13

N = 16

ND = Not detected.
NC = Not calculated. UCL cannot be calculated with only one site result.
NOTE: A mean associated with Log Normal data was calculated using a scale bias correction factor.
a. Random uniform numbers, between zero and the lesser of the minimum result and the detection limit, substituted for non-detected values.
b. One-sided 95% upper confidence limit for the mean.

Attachment 4A-2

**Raw Data for Groundwater,
Surface Soil, and Subsurface Soil**

Groundwater Raw Data

------------ Site=Control Tower Method=Inorganics Analyte=Aluminum ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW6010	L	-0.0427	-0.0427	DET	0.0523	mg/L	JB
1994	SW6010	L	-0.0282	-0.0282	DET	0.0523	mg/L	JB

N = 2

------------ Site=Control Tower Method=Inorganics Analyte=Antimony ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW6010	L	0.030	0.030	DET	0.076	mg/L	JB
1994	SW6010	L	0.045	0.045	DET	0.076	mg/L	JB

N = 2

------------ Site=Control Tower Method=Inorganics Analyte=Arsenic ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW7060	L	-.00145	-.00145	DET	.000647	mg/L	JB
1994	SW7060	L	-.00007	-.00007	DET	.000647	mg/L	JB

N = 2

------------ Site=Control Tower Method=Inorganics Analyte=Barium ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW6010	L	0.165	0.165	DET	.00086	mg/L	
1994	SW6010	L	0.131	0.131	DET	.00086	mg/L	

N = 2

a. Random uniform numbers, between zero and the lesser of the minimum result a

------------ Site=Control Tower Method=Inorganics Analyte=Beryllium ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW6010	L	-.00163	-.00163	DET	.00051	mg/L	JB
1994	SW6010	L	-.00053	-.00053	DET	.00051	mg/L	JB

N = 2

------------ Site=Control Tower Method=Inorganics Analyte=Cadmium ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW6010	L	-.00082	-.00082	DET	.00386	mg/L	JB
1994	SW6010	L	0.00039	0.00039	DET	.00386	mg/L	JB

N = 2

------------ Site=Control Tower Method=Inorganics Analyte=Calcium ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW6010	L	164	164	DET	0.0175	mg/L	
1994	SW6010	L	190	190	DET	0.0175	mg/L	

N = 2

------------ Site=Control Tower Method=Inorganics Analyte=Chromium ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW6010	L	-.00207	-.00207	DET	.00524	mg/L	JB
1994	SW6010	L	0.00415	0.00415	DET	.00524	mg/L	JB

N = 2

a. Random uniform numbers, between zero and the lesser of the minimum result a

------------- Site=Control Tower Method=Inorganics Analyte=Cobalt -------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW6010	L	-.00182	-.00182	DET	.00407	mg/L	JB
1994	SW6010	L	-.00365	-.00365	DET	.00407	mg/L	JB

N = 2

------------- Site=Control Tower Method=Inorganics Analyte=Copper -------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW6010	L	0.00529	0.00529	DET	.00916	mg/L	JB
1994	SW6010	L	0.02300	0.02300	DET	.00916	mg/L	

N = 2

------------- Site=Control Tower Method=Inorganics Analyte=Iron -------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW6010	L	.00124	.00124	DET	.00452	mg/L	JB
1994	SW6010	L	.00266	.00266	DET	.00452	mg/L	JB

N = 2

------------- Site=Control Tower Method=Inorganics Analyte=Lead -------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW7421	L	0.00056	0.00056	DET	.0022	mg/L	JB
1994	SW7421	L	-.00066	-.00066	DET	.0022	mg/L	JB

N = 2

a. Random uniform numbers, between zero and the lesser of the minimum result a

----------- Site=Control Tower Method=Inorganics Analyte=Magnesium ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW6010	L	31.9	31.9	DET	0.0479	mg/L	
1994	SW6010	L	36.9	36.9	DET	0.0479	mg/L	

N = 2

----------- Site=Control Tower Method=Inorganics Analyte=Manganese ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW6010	L	-.00060	-.00060	DET	.00155	mg/L	JB
1994	SW6010	L	0.00766	0.00766	DET	.00155	mg/L	B

N = 2

----------- Site=Control Tower Method=Inorganics Analyte=Molybdenum -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW6010	L	-.00041	-.00041	DET	.00739	mg/L	JB
1994	SW6010	L	0.00581	0.00581	DET	.00739	mg/L	JB

N = 2

------------- Site=Control Tower Method=Inorganics Analyte=Nickel ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW6010	L	.00103	.00103	DET	0.0141	mg/L	JB
1994	SW6010	L	.00311	.00311	DET	0.0141	mg/L	JB

N = 2

a. Random uniform numbers, between zero and the lesser of the minimum result a

------------ Site=Control Tower Method=Inorganics Analyte=Potassium ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW6010	L	5.16	5.16	DET	0.822	mg/L	
1994	SW6010	L	3.56	3.56	DET	0.822	mg/L	

N = 2

------------ Site=Control Tower Method=Inorganics Analyte=Selenium ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW6010	L	-0.00931	-0.00931	DET	0.0891	mg/L	JB
1994	SW6010	L	0.05900	0.05900	DET	0.0891	mg/L	JB

N = 2

------------- Site=Control Tower Method=Inorganics Analyte=Silver -------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW6010	L	-.00201	-.00201	DET	.00519	mg/L	JB
1994	SW6010	L	-.00404	-.00404	DET	.00519	mg/L	JB

N = 2

------------- Site=Control Tower Method=Inorganics Analyte=Sodium -------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW6010	L	5.40	5.40	DET	0.0401	mg/L	
1994	SW6010	L	6.29	6.29	DET	0.0401	mg/L	

N = 2

a. Random uniform numbers, between zero and the lesser of the minimum result a

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------------ Site=Control Tower Method=Inorganics Analyte=Thallium ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW6010	L	-0.0499	-0.0499	DET	0.0833	mg/L	JB
1994	SW6010	L	-0.0188	-0.0188	DET	0.0833	mg/L	JB

N = 2

------------ Site=Control Tower Method=Inorganics Analyte=Vanadium ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW6010	L	0.00029	0.00029	DET	.00454	mg/L	JB
1994	SW6010	L	-.00241	-.00241	DET	.00454	mg/L	JB

N = 2

-------------- Site=Control Tower Method=Inorganics Analyte=Zinc --------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW6010	L	0.00936	0.00936	DET	.00402	mg/L	B
1994	SW6010	L	0.01160	0.01160	DET	.00402	mg/L	B

N = 2

---- Site=Control Tower Method=Organics Analyte=1,1,1,2-Tetrachloroethane -----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8260	L	.	.000068827	ND	.0000851	mg/L	
1994	SW8260	L	.	.000006759	ND	.0000851	mg/L	

N = 2

a. Random uniform numbers, between zero and the lesser of the minimum result a

------ Site=Control Tower Method=Organics Analyte=1,1,1-Trichloroethane -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8260	L	.	.000030256	ND	.0000992	mg/L	
1994	SW8260	L	.	.000068686	ND	.0000992	mg/L	

N = 2

---- Site=Control Tower Method=Organics Analyte=1,1,2,2-Tetrachloroethane -----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8260	L	.	.00001995	ND	.00017	mg/L	
1994	SW8260	L	.	.00012058	ND	.00017	mg/L	

N = 2

------ Site=Control Tower Method=Organics Analyte=1,1,2-Trichloroethane -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8260	L	.	.000077210	ND	.000092	mg/L	
1994	SW8260	L	.	.000081006	ND	.000092	mg/L	

N = 2

-------- Site=Control Tower Method=Organics Analyte=1,1-Dichloroethane --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8260	L	.	.000051555	ND	.0000886	mg/L	
1994	SW8260	L	.	.000008677	ND	.0000886	mg/L	

N = 2

a. Random uniform numbers, between zero and the lesser of the minimum result a

-------- Site=Control Tower Method=Organics Analyte=1,1-Dichloroethene --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8260	L	.	.000036476	ND	.0000806	mg/L	
1994	SW8260	L	.	.000012254	ND	.0000806	mg/L	

N = 2

------ Site=Control Tower Method=Organics Analyte=1,2,3-Trichloropropane ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8260	L	.	.00012009	ND	.000233	mg/L	
1994	SW8260	L	.	.00012843	ND	.000233	mg/L	

N = 2

------ Site=Control Tower Method=Organics Analyte=1,2,4-Trichlorobenzene ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.00035664	ND	.000435	mg/L	
1994	SW8270	L	.	.00026291	ND	.000440	mg/L	

N = 2

------- Site=Control Tower Method=Organics Analyte=1,2-Dichlorobenzene --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8260	L	.	.00016517	ND	.000354	mg/L	
1994	SW8260	L	.	.00021112	ND	.000354	mg/L	

N = 2

a. Random uniform numbers, between zero and the lesser of the minimum result a

-------- Site=Control Tower Method=Organics Analyte=1,2-Dichloroethane --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8260	L	.	.00001543	ND	.0000791	mg/L	
1994	SW8260	L	.00064	.00064000	DET	.0000791	mg/L	

N = 2

------- Site=Control Tower Method=Organics Analyte=1,2-Dichloropropane --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8260	L	.	.0000049397	ND	.0000742	mg/L	
1994	SW8260	L	.	.0000052919	ND	.0000742	mg/L	

N = 2

------- Site=Control Tower Method=Organics Analyte=1,3-Dichlorobenzene --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8260	L	.	.00023605	ND	.000391	mg/L	
1994	SW8260	L	.	.00010615	ND	.000391	mg/L	

N = 2

------- Site=Control Tower Method=Organics Analyte=1,4-Dichlorobenzene --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8260	L	.	.00008562	ND	.000423	mg/L	
1994	SW8260	L	.	.00031717	ND	.000423	mg/L	

N = 2

a. Random uniform numbers, between zero and the lesser of the minimum result a

---------- Site=Control Tower Method=Organics Analyte=1-Chlorohexane ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8260	L	.	.000061526	ND	.000154	mg/L	
1994	SW8260	L	.	.000078608	ND	.000154	mg/L	

N = 2

------ Site=Control Tower Method=Organics Analyte=2,4,5-Trichlorophenol -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.00047839	ND	.000544	mg/L	
1994	SW8270	L	.	.00011693	ND	.000550	mg/L	

N = 2

------ Site=Control Tower Method=Organics Analyte=2,4,6-Trichlorophenol -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.00049658	ND	.000648	mg/L	
1994	SW8270	L	.	.00016898	ND	.000654	mg/L	

N = 2

-------- Site=Control Tower Method=Organics Analyte=2,4-Dichlorophenol --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.00072655	ND	.000861	mg/L	
1994	SW8270	L	.	.00083662	ND	.000869	mg/L	

N = 2

a. Random uniform numbers, between zero and the lesser of the minimum result a

-------- Site=Control Tower Method=Organics Analyte=2,4-Dimethylphenol --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.00029567	ND	.000798	mg/L	
1994	SW8270	L	.	.00055918	ND	.000806	mg/L	

N = 2

-------- Site=Control Tower Method=Organics Analyte=2,4-Dinitrophenol ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.0005987	ND	.00111	mg/L	
1994	SW8270	L	.	.0010833	ND	.00112	mg/L	

N = 2

-------- Site=Control Tower Method=Organics Analyte=2,4-Dinitrotoluene --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.00013082	ND	.000676	mg/L	
1994	SW8270	L	.	.00034419	ND	.000683	mg/L	

N = 2

-------- Site=Control Tower Method=Organics Analyte=2,6-Dinitrotoluene --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.00064684	ND	.000737	mg/L	
1994	SW8270	L	.	.00005458	ND	.000745	mg/L	

N = 2

a. Random uniform numbers, between zero and the lesser of the minimum result a

--------- Site=Control Tower Method=Organics Analyte=2-Butanone(MEK) ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8260	L	.	.00063284	ND	.00089	mg/L	
1994	SW8260	L	.	.00076995	ND	.00089	mg/L	

N = 2

---- Site=Control Tower Method=Organics Analyte=2-Chloroethyl vinyl ether -----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8260	L	.	.000062128	ND	.000124	mg/L	
1994	SW8260	L	.	.000062952	ND	.000124	mg/L	

N = 2

------- Site=Control Tower Method=Organics Analyte=2-Chloronaphthalene --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.00019383	ND	.000650	mg/L	
1994	SW8270	L	.	.00044804	ND	.000656	mg/L	

N = 2

---------- Site=Control Tower Method=Organics Analyte=2-Chlorophenol ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.00005982	ND	.000560	mg/L	
1994	SW8270	L	.	.00052172	ND	.000565	mg/L	

N = 2

a. Random uniform numbers, between zero and the lesser of the minimum result a

------------ Site=Control Tower Method=Organics Analyte=2-Hexanone ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8260	L	.	.00029155	ND	.000766	mg/L	
1994	SW8260	L	.	.00069103	ND	.000766	mg/L	

N = 2

------- Site=Control Tower Method=Organics Analyte=2-Methylnaphthalene --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.00005038	ND	.000575	mg/L	
1994	SW8270	L	.	.00035155	ND	.000580	mg/L	

N = 2

----- Site=Control Tower Method=Organics Analyte=2-Methylphenol(o-cresol) -----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.00021563	ND	.000311	mg/L	
1994	SW8270	L	.	.00017380	ND	.000314	mg/L	

N = 2

---------- Site=Control Tower Method=Organics Analyte=2-Nitroaniline ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.00026840	ND	.000730	mg/L	
1994	SW8270	L	.	.00040789	ND	.000738	mg/L	

N = 2

a. Random uniform numbers, between zero and the lesser of the minimum result a

---------- Site=Control Tower Method=Organics Analyte=2-Nitrophenol -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.00070587	ND	.000733	mg/L	
1994	SW8270	L	.	.00011183	ND	.000741	mg/L	

N = 2

------ Site=Control Tower Method=Organics Analyte=3,3'-Dichlorobenzidine ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.00068835	ND	.000885	mg/L	
1994	SW8270	L	.	.00088863	ND	.000894	mg/L	

N = 2

---------- Site=Control Tower Method=Organics Analyte=3-Nitroaniline ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.00032759	ND	.000771	mg/L	
1994	SW8270	L	.	.00054299	ND	.000778	mg/L	

N = 2

------------- Site=Control Tower Method=Organics Analyte=4,4'-DDD -------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8080	L	.	.0000012252	ND	.00000299	mg/L	
1994	SW8080	L	.	.0000020351	ND	.00000305	mg/L	

N = 2

a. Random uniform numbers, between zero and the lesser of the minimum result a

------------ Site=Control Tower Method=Organics Analyte=4,4'-DDE ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8080	L	.	.0000016433	ND	.00000344	mg/L	
1994	SW8080	L	.00001	.0000050000	DET	.00000351	mg/L	P

N = 2

------------ Site=Control Tower Method=Organics Analyte=4,4'-DDT ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8080	L	.	.000000846	ND	.00000367	mg/L	
1994	SW8080	L	.0000126	.000012600	DET	.00001330	mg/L	KJ

N = 2

---- Site=Control Tower Method=Organics Analyte=4,6-Dinitro-2-methylphenol ----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.00084048	ND	.000972	mg/L	
1994	SW8270	L	.	.00019681	ND	.000981	mg/L	

N = 2

---- Site=Control Tower Method=Organics Analyte=4-Bromophenyl phenyl ether ----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.00036431	ND	.000415	mg/L	
1994	SW8270	L	.	.00033298	ND	.000419	mg/L	

N = 2

a. Random uniform numbers, between zero and the lesser of the minimum result a

----- Site=Control Tower Method=Organics Analyte=4-Chloro-3-methylphenol ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.00033475	ND	.000396	mg/L	
1994	SW8270	L	.	.00001769	ND	.000400	mg/L	

N = 2

-------- Site=Control Tower Method=Organics Analyte=4-Chloroaniline ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.00018103	ND	.000929	mg/L	
1994	SW8270	L	.	.00050768	ND	.000939	mg/L	

N = 2

--- Site=Control Tower Method=Organics Analyte=4-Chlorophenyl phenyl ether ----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.00008038	ND	.000463	mg/L	
1994	SW8270	L	.	.00020723	ND	.000467	mg/L	

N = 2

---- Site=Control Tower Method=Organics Analyte=4-Methyl-2-pentanone(MIBK) ----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8260	L	.	.00039260	ND	.000501	mg/L	
1994	SW8260	L	.	.00047323	ND	.000501	mg/L	

N = 2

a. Random uniform numbers, between zero and the lesser of the minimum result a

-- Site=Control Tower Method=Organics Analyte=4-Methylphenol/3-Methylphenol ---

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.00019928	ND	.000361	mg/L	
1994	SW8270	L	.	.00027477	ND	.000364	mg/L	

N = 2

--------- Site=Control Tower Method=Organics Analyte=4-Nitroaniline ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.00058740	ND	.00108	mg/L	
1994	SW8270	L	.	.00015090	ND	.00109	mg/L	

N = 2

--------- Site=Control Tower Method=Organics Analyte=4-Nitrophenol ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.00075238	ND	.00115	mg/L	
1994	SW8270	L	.	.00055361	ND	.00116	mg/L	

N = 2

---------- Site=Control Tower Method=Organics Analyte=Acenaphthene ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.00003616	ND	.000632	mg/L	
1994	SW8270	L	.	.00034874	ND	.000639	mg/L	

N = 2

a. Random uniform numbers, between zero and the lesser of the minimum result a

--------- Site=Control Tower Method=Organics Analyte=Acenaphthylene ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.000011764	ND	.000626	mg/L	
1994	SW8270	L	.	.000057109	ND	.000633	mg/L	

N = 2

------------ Site=Control Tower Method=Organics Analyte=Acetone -------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8260	L	.00615	.00615	DET	.00209	mg/L	
1994	SW8260	L	.00594	.00594	DET	.00209	mg/L	

N = 2

------------- Site=Control Tower Method=Organics Analyte=Aldrin -------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8080	L	.	.000000159	ND	.00000411	mg/L	
1994	SW8080	L	.0000177	.000017700	DET	.00000419	mg/L	

N = 2

----------- Site=Control Tower Method=Organics Analyte=Anthracene -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.00005592	ND	.000755	mg/L	
1994	SW8270	L	.	.00071654	ND	.000762	mg/L	

N = 2

a. Random uniform numbers, between zero and the lesser of the minimum result a

------------- Site=Control Tower Method=Organics Analyte=Benzene -------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8260	L	.00005	.000050000	DET	.0000307	mg/L	B
1994	SW8260	L	.	.000022024	ND	.0000307	mg/L	

N = 2

-------- Site=Control Tower Method=Organics Analyte=Benzo(a)anthracene --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.00006872	ND	.000588	mg/L	
1994	SW8270	L	.	.00016255	ND	.000594	mg/L	

N = 2

---------- Site=Control Tower Method=Organics Analyte=Benzo(a)pyrene ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.00077705	ND	.000786	mg/L	
1994	SW8270	L	.	.00050691	ND	.000794	mg/L	

N = 2

------- Site=Control Tower Method=Organics Analyte=Benzo(b)fluoranthene -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.00063592	ND	.00104	mg/L	
1994	SW8270	L	.	.00000080	ND	.00105	mg/L	

N = 2

a. Random uniform numbers, between zero and the lesser of the minimum result a

------- Site=Control Tower Method=Organics Analyte=Benzo(g,h,i)perylene -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.0005164	ND	.00112	mg/L	
1994	SW8270	L	.	.0010924	ND	.00113	mg/L	

N = 2

------- Site=Control Tower Method=Organics Analyte=Benzo(k)fluoranthene -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.00041776	ND	.00109	mg/L	
1994	SW8270	L	.	.00090782	ND	.00110	mg/L	

N = 2

----------- Site=Control Tower Method=Organics Analyte=Benzoic acid -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	0.000039	ND	0.0258	mg/L	
1994	SW8270	L	.	0.022818	ND	0.0260	mg/L	

N = 2

---------- Site=Control Tower Method=Organics Analyte=Benzyl alcohol ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.00029569	ND	.000532	mg/L	
1994	SW8270	L	.	.00037545	ND	.000538	mg/L	

N = 2

a. Random uniform numbers, between zero and the lesser of the minimum result a

----------- Site=Control Tower Method=Organics Analyte=Bromobenzene -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8260	L	.	.000047673	ND	.000165	mg/L	
1994	SW8260	L	.	.000003381	ND	.000165	mg/L	

N = 2

------- Site=Control Tower Method=Organics Analyte=Bromodichloromethane -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8260	L	.	.000005886	ND	.0000536	mg/L	
1994	SW8260	L	.	.000040449	ND	.0000536	mg/L	

N = 2

----------- Site=Control Tower Method=Organics Analyte=Bromomethane -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8260	L	.	.000087928	ND	.0000968	mg/L	
1994	SW8260	L	.	.000090620	ND	.0000968	mg/L	

N = 2

------- Site=Control Tower Method=Organics Analyte=Butylbenzylphthalate -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.0016179	ND	.00180	mg/L	
1994	SW8270	L	.	.0016509	ND	.00182	mg/L	

N = 2

a. Random uniform numbers, between zero and the lesser of the minimum result a

--------- Site=Control Tower Method=Organics Analyte=Carbon disulfide ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8260	L	.	.00011906	ND	.000161	mg/L	
1994	SW8260	L	.	.00007906	ND	.000161	mg/L	

N = 2

------- Site=Control Tower Method=Organics Analyte=Carbon tetrachloride -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8260	L	.	.000068736	ND	.000117	mg/L	
1994	SW8260	L	.	.000036464	ND	.000117	mg/L	

N = 2

------------ Site=Control Tower Method=Organics Analyte=Chlordane ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8080	L	.	.000016845	ND	.0000199	mg/L	
1994	SW8080	L	.	.000002672	ND	.0000203	mg/L	

N = 2

---------- Site=Control Tower Method=Organics Analyte=Chlorobenzene ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8260	L	.	.00011143	ND	.000112	mg/L	
1994	SW8260	L	.	.00008617	ND	.000112	mg/L	

N = 2

a. Random uniform numbers, between zero and the lesser of the minimum result a

----------- Site=Control Tower Method=Organics Analyte=Chloroethane -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8260	L	.	.000085087	ND	.0000972	mg/L	
1994	SW8260	L	.	.000011293	ND	.0000972	mg/L	

N = 2

----------- Site=Control Tower Method=Organics Analyte=Chloroform ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8260	L	.	.000014704	ND	.0000363	mg/L	
1994	SW8260	L	.	.000014278	ND	.0000363	mg/L	

N = 2

---------- Site=Control Tower Method=Organics Analyte=Chloromethane -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8260	L	.00031	.00031000	DET	.000155	mg/L	
1994	SW8260	L	.	.00003106	ND	.000155	mg/L	

N = 2

------------ Site=Control Tower Method=Organics Analyte=Chrysene ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.00089701	ND	.00098	mg/L	
1994	SW8270	L	.	.00052411	ND	.00099	mg/L	

N = 2

a. Random uniform numbers, between zero and the lesser of the minimum result a

------- Site=Control Tower Method=Organics Analyte=Di-n-octylphthalate --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.00024906	ND	.000510	mg/L	
1994	SW8270	L	.	.00006176	ND	.000515	mg/L	

N = 2

------ Site=Control Tower Method=Organics Analyte=Dibenz(a,h)anthracene -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.00041693	ND	.00099	mg/L	
1994	SW8270	L	.	.00052766	ND	.00100	mg/L	

N = 2

----------- Site=Control Tower Method=Organics Analyte=Dibenzofuran -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.00053032	ND	.000548	mg/L	
1994	SW8270	L	.	.00054082	ND	.000553	mg/L	

N = 2

------- Site=Control Tower Method=Organics Analyte=Dibromochloromethane -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8260	L	.	.000022314	ND	.0000283	mg/L	
1994	SW8260	L	.	.000020103	ND	.0000283	mg/L	

N = 2

a. Random uniform numbers, between zero and the lesser of the minimum result a

---------- Site=Control Tower Method=Organics Analyte=Dibromomethane ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8260	L	.00021	.00021000	DET	.0000598	mg/L	
1994	SW8260	L	.	.00001592	ND	.0000598	mg/L	

N = 2

-------- Site=Control Tower Method=Organics Analyte=Dibutyl phthalate ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.00018522	ND	.000489	mg/L	
1994	SW8270	L	.	.00024874	ND	.000494	mg/L	

N = 2

------------- Site=Control Tower Method=Organics Analyte=Dieldrin -------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8080	L	.	.0000025996	ND	.00000280	mg/L	
1994	SW8080	L	.0000079	.0000079000	DET	.00000286	mg/L	

N = 2

------ Site=Control Tower Method=Organics Analyte=Diesel Range Organics -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	AK102	L	0.034	0.034	DET	0.1	mg/L	J
1994	AK102	L	0.000	0.000	DET	0.1	mg/L	JB

N = 2

a. Random uniform numbers, between zero and the lesser of the minimum result a

--------- Site=Control Tower Method=Organics Analyte=Diethylphthalate ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.00007649	ND	.000251	mg/L	
1994	SW8270	L	.	.00012563	ND	.000253	mg/L	

N = 2

-------- Site=Control Tower Method=Organics Analyte=Dimethylphthalate ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.00024566	ND	.000443	mg/L	
1994	SW8270	L	.	.00003841	ND	.000448	mg/L	

N = 2

Site=Control Tower Method=Organics Analyte=Diphenylamine (N-Nitrosodiphenylamin

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.00034725	ND	.000890	mg/L	
1994	SW8270	L	.	.00037113	ND	.000899	mg/L	

N = 2

----------- Site=Control Tower Method=Organics Analyte=Endosulfan I -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8080	L	.	.0000019475	ND	.00000215	mg/L	
1994	SW8080	L	.0000094	.0000094000	DET	.00000219	mg/L	

N = 2

a. Random uniform numbers, between zero and the lesser of the minimum result a

---------- Site=Control Tower Method=Organics Analyte=Endosulfan II -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8080	L	.	.0000019090	ND	.00000376	mg/L	
1994	SW8080	L	.	.0000005458	ND	.00000384	mg/L	

N = 2

-------- Site=Control Tower Method=Organics Analyte=Endosulfan sulfate --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8080	L	.0000030	.0000030	DET	.00001000	mg/L	KJ
1994	SW8080	L	.0000036	.0000036	DET	.00000507	mg/L	KJ

N = 2

------------- Site=Control Tower Method=Organics Analyte=Endrin -------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8080	L	.	.0000020421	ND	.00000758	mg/L	
1994	SW8080	L	.	.0000004043	ND	.00000773	mg/L	

N = 2

-------- Site=Control Tower Method=Organics Analyte=Endrin aldehyde ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8080	L	.	.0000039650	ND	.00000625	mg/L	
1994	SW8080	L	.	.0000046498	ND	.00000638	mg/L	

N = 2

a. Random uniform numbers, between zero and the lesser of the minimum result a

----------- Site=Control Tower Method=Organics Analyte=Ethylbenzene -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8260	L	.	.000019022	ND	.00011	mg/L	
1994	SW8260	L	.	.000030083	ND	.00011	mg/L	

N = 2

---------- Site=Control Tower Method=Organics Analyte=Fluoranthene -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.00005916	ND	.000583	mg/L	
1994	SW8270	L	.	.00049149	ND	.000589	mg/L	

N = 2

------------ Site=Control Tower Method=Organics Analyte=Fluorene ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.00020269	ND	.000454	mg/L	
1994	SW8270	L	.	.00009879	ND	.000458	mg/L	

N = 2

----- Site=Control Tower Method=Organics Analyte=Gasoline Range Organics ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	AK101	L	0.009	0.009	DET	0.05	mg/L	J
1994	AK101	L	0.010	0.010	DET	0.05	mg/L	J

N = 2

a. Random uniform numbers, between zero and the lesser of the minimum result a

------------ Site=Control Tower Method=Organics Analyte=Heptachlor ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8080	L	.0000004	.0000004	DET	.00000645	mg/L	KJ
1994	SW8080	L	.0000033	.0000033	DET	.00000658	mg/L	PJ

N = 2

-------- Site=Control Tower Method=Organics Analyte=Heptachlor epoxide --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8080	L	.0000001	.0000001	DET	.00000935	mg/L	KJ
1994	SW8080	L	.0000555	.0000555	DET	.00000954	mg/L	

N = 2

-------- Site=Control Tower Method=Organics Analyte=Hexachlorobenzene ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.00023593	ND	.000545	mg/L	
1994	SW8270	L	.	.00049339	ND	.000550	mg/L	

N = 2

------- Site=Control Tower Method=Organics Analyte=Hexachlorobutadiene --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.00026223	ND	.00102	mg/L	
1994	SW8270	L	.	.00069086	ND	.00103	mg/L	

N = 2

a. Random uniform numbers, between zero and the lesser of the minimum result a

---- Site=Control Tower Method=Organics Analyte=Hexachlorocyclopentadiene -----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.00041893	ND	.00118	mg/L	
1994	SW8270	L	.	.00006776	ND	.00119	mg/L	

N = 2

--------- Site=Control Tower Method=Organics Analyte=Hexachloroethane ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.00024325	ND	.000546	mg/L	
1994	SW8270	L	.	.00000671	ND	.000551	mg/L	

N = 2

------ Site=Control Tower Method=Organics Analyte=Indeno(1,2,3-cd)pyrene ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.00032689	ND	.000874	mg/L	
1994	SW8270	L	.	.00061679	ND	.000882	mg/L	

N = 2

------------ Site=Control Tower Method=Organics Analyte=Isophorone ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.000065608	ND	.000320	mg/L	
1994	SW8270	L	.	.000064389	ND	.000323	mg/L	

N = 2

a. Random uniform numbers, between zero and the lesser of the minimum result a

----------- Site=Control Tower Method=Organics Analyte=Methoxychlor -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8080	L	.	.0000035090	ND	.0000395	mg/L	
1994	SW8080	L	.0000058	.0000058000	DET	.0000626	mg/L	KJ

N = 2

-------- Site=Control Tower Method=Organics Analyte=Methylene chloride --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8260	L	.00018	.00018	DET	.000151	mg/L	B
1994	SW8260	L	.00019	.00019	DET	.000151	mg/L	B

N = 2

------ Site=Control Tower Method=Organics Analyte=N-Nitrosodipropylamine ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.00059096	ND	.000610	mg/L	
1994	SW8270	L	.	.00008005	ND	.000616	mg/L	

N = 2

---------- Site=Control Tower Method=Organics Analyte=Naphthalene ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.00033764	ND	.000764	mg/L	
1994	SW8270	L	.	.00055467	ND	.000771	mg/L	

N = 2

a. Random uniform numbers, between zero and the lesser of the minimum result a

----------- Site=Control Tower Method=Organics Analyte=Nitrobenzene -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.00020759	ND	.000434	mg/L	
1994	SW8270	L	.	.00031075	ND	.000439	mg/L	

N = 2

------------- Site=Control Tower Method=Organics Analyte=PCB-1016 -------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8080	L	.	.000027305	ND	.0000321	mg/L	
1994	SW8080	L	.	.000022891	ND	.0000327	mg/L	

N = 2

------------- Site=Control Tower Method=Organics Analyte=PCB-1221 -------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8080	L	.	.000000489	ND	.0000288	mg/L	
1994	SW8080	L	.	.000014565	ND	.0000294	mg/L	

N = 2

------------- Site=Control Tower Method=Organics Analyte=PCB-1232 -------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8080	L	.	.000064270	ND	.0000728	mg/L	
1994	SW8080	L	.	.000006569	ND	.0000743	mg/L	

N = 2

a. Random uniform numbers, between zero and the lesser of the minimum result a

------------- Site=Control Tower Method=Organics Analyte=PCB-1242 -------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8080	L	.	.000009740	ND	.0000267	mg/L	
1994	SW8080	L	.	.000021404	ND	.0000272	mg/L	

N = 2

------------- Site=Control Tower Method=Organics Analyte=PCB-1248 -------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8080	L	.	.000001144	ND	.0000316	mg/L	
1994	SW8080	L	.	.000029105	ND	.0000322	mg/L	

N = 2

------------- Site=Control Tower Method=Organics Analyte=PCB-1254 -------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8080	L	.	.0000051563	ND	.0000126	mg/L	
1994	SW8080	L	.	.0000049297	ND	.0000129	mg/L	

N = 2

------------- Site=Control Tower Method=Organics Analyte=PCB-1260 -------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8080	L	.	.000021490	ND	.0000351	mg/L	
1994	SW8080	L	.	.000029737	ND	.0000358	mg/L	

N = 2

a. Random uniform numbers, between zero and the lesser of the minimum result a

-------- Site=Control Tower Method=Organics Analyte=Pentachlorophenol ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.00048599	ND	.000942	mg/L	
1994	SW8270	L	.	.00088888	ND	.000951	mg/L	

N = 2

----------- Site=Control Tower Method=Organics Analyte=Phenanthrene -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.00038594	ND	.000653	mg/L	
1994	SW8270	L	.	.00024173	ND	.000659	mg/L	

N = 2

-------------- Site=Control Tower Method=Organics Analyte=Phenol --------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.00030649	ND	.000369	mg/L	
1994	SW8270	L	.	.00033664	ND	.000372	mg/L	

N = 2

-------------- Site=Control Tower Method=Organics Analyte=Pyrene --------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.00049189	ND	.000700	mg/L	
1994	SW8270	L	.	.00000777	ND	.000707	mg/L	

N = 2

a. Random uniform numbers, between zero and the lesser of the minimum result a

------------- Site=Control Tower Method=Organics Analyte=Styrene --------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8260	L	.	.000054181	ND	.000113	mg/L	
1994	SW8260	L	.	.000064699	ND	.000113	mg/L	

N = 2

-------- Site=Control Tower Method=Organics Analyte=Tetrachloroethene ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8260	L	.	.00003976	ND	.000209	mg/L	
1994	SW8260	L	.	.00013356	ND	.000209	mg/L	

N = 2

------------- Site=Control Tower Method=Organics Analyte=Toluene --------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8260	L	.00013	.00013	DET	.0000336	mg/L	
1994	SW8260	L	.00003	.00003	DET	.0000336	mg/L	JB

N = 2

------------ Site=Control Tower Method=Organics Analyte=Toxaphene -------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8080	L	.	.000044840	ND	.0000564	mg/L	
1994	SW8080	L	.	.000001393	ND	.0000575	mg/L	

N = 2

a. Random uniform numbers, between zero and the lesser of the minimum result a

---- Site=Control Tower Method=Organics Analyte=Tribromomethane(Bromoform) ----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8260	L	.	.000005483	ND	.000108	mg/L	
1994	SW8260	L	.	.000036812	ND	.000108	mg/L	

N = 2

--------- Site=Control Tower Method=Organics Analyte=Trichloroethene ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8260	L	.00033	.00033	DET	.0000439	mg/L	
1994	SW8260	L	.00928	.00928	DET	.0000439	mg/L	

N = 2

------ Site=Control Tower Method=Organics Analyte=Trichlorofluoromethane ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8260	L	.	.000020563	ND	.0000943	mg/L	
1994	SW8260	L	.	.000050616	ND	.0000943	mg/L	

N = 2

---------- Site=Control Tower Method=Organics Analyte=Vinyl acetate -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8260	L	.	.00011333	ND	.000127	mg/L	
1994	SW8260	L	.	.00000076	ND	.000127	mg/L	

N = 2

a. Random uniform numbers, between zero and the lesser of the minimum result a

---------- Site=Control Tower Method=Organics Analyte=Vinyl chloride ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8260	L	.	.000093544	ND	.0000992	mg/L	
1994	SW8260	L	.	.000010554	ND	.0000992	mg/L	

N = 2

----------- Site=Control Tower Method=Organics Analyte=alpha-BHC -------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8080	L	.	.0000001510	ND	.00000286	mg/L	
1994	SW8080	L	.	.0000018913	ND	.00000292	mg/L	

N = 2

------------ Site=Control Tower Method=Organics Analyte=beta-BHC -------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8080	L	.	.0000001267	ND	.00000405	mg/L	
1994	SW8080	L	.0000071	.0000071000	DET	.00000413	mg/L	P

N = 2

---- Site=Control Tower Method=Organics Analyte=bis(2-Chloroethoxy)methane ----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.00047618	ND	.000625	mg/L	
1994	SW8270	L	.	.00024588	ND	.000632	mg/L	

N = 2

a. Random uniform numbers, between zero and the lesser of the minimum result a

----- Site=Control Tower Method=Organics Analyte=bis(2-Chloroethyl)ether ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.00035189	ND	.000482	mg/L	
1994	SW8270	L	.	.00019168	ND	.000487	mg/L	

N = 2

--- Site=Control Tower Method=Organics Analyte=bis(2-Chloroisopropyl)ether ----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.00041738	ND	.000438	mg/L	
1994	SW8270	L	.	.00024297	ND	.000443	mg/L	

N = 2

---- Site=Control Tower Method=Organics Analyte=bis(2-Ethylhexyl)phthalate ----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8270	L	.	.0005183	ND	.00263	mg/L	
1994	SW8270	L	.	.0016297	ND	.00265	mg/L	

N = 2

------ Site=Control Tower Method=Organics Analyte=cis-1,2-Dichloroethene ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8260	L	.	0.000024	ND	.0000785	mg/L	
1994	SW8260	L	0.0233	0.023300	DET	.0000785	mg/L	

N = 2

a. Random uniform numbers, between zero and the lesser of the minimum result a

----- Site=Control Tower Method=Organics Analyte=cis-1,3-Dichloropropene ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8260	L	.	.000021374	ND	.0000758	mg/L	
1994	SW8260	L	.	.000045712	ND	.0000758	mg/L	

N = 2

------------ Site=Control Tower Method=Organics Analyte=delta-BHC -------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8080	L	.	.0000004703	ND	.000000852	mg/L	
1994	SW8080	L	.	.0000020409	ND	.000002380	mg/L	

N = 2

-------- Site=Control Tower Method=Organics Analyte=gamma-BHC(Lindane) --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8080	L	.	.000001479	ND	.00000178	mg/L	
1994	SW8080	L	.0000133	.000013300	DET	.00000182	mg/L	

N = 2

----------- Site=Control Tower Method=Organics Analyte=m&p-Xylenes -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8260	L	.00007	.000070000	DET	.000365	mg/L	J
1994	SW8260	L	.	.000061494	ND	.000365	mg/L	

N = 2

a. Random uniform numbers, between zero and the lesser of the minimum result a

------------- Site=Control Tower Method=Organics Analyte=o-Xylene -------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8260	L	.	.000049719	ND	.000124	mg/L	
1994	SW8260	L	.	.000027636	ND	.000124	mg/L	

N = 2

----- Site=Control Tower Method=Organics Analyte=trans-1,2-Dichloroethene -----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8260	L	.	.0000376	ND	.000131	mg/L	
1994	SW8260	L	.00133	.0013300	DET	.000131	mg/L	

N = 2

---- Site=Control Tower Method=Organics Analyte=trans-1,3-Dichloropropene -----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1994	SW8260	L	.	.000058354	ND	.0000829	mg/L	
1994	SW8260	L	.	.000034145	ND	.0000829	mg/L	

N = 2

---------- Site=Southeast Runway Method=Inorganics Analyte=Aluminum -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW6010	L	0.09040	0.09040	DET	0.0523	mg/L	
1995	SW6010	L	-0.02910	-0.02910	DET	0.0523	mg/L	J
1995	SW6010	L	-0.00093	-0.00093	DET	0.0523	mg/L	J
1995	SW6010	L	0.00646	0.00646	DET	0.0523	mg/L	J

N = 4

a. Random uniform numbers, between zero and the lesser of the minimum result a

---------- Site=Southeast Runway Method=Inorganics Analyte=Antimony -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW6010	L	0.00583	0.00583	DET	0.076	mg/L	J
1995	SW6010	L	-0.09280	-0.09280	DET	0.076	mg/L	J
1995	SW6010	L	-0.10300	-0.10300	DET	0.076	mg/L	J
1995	SW6010	L	-0.03210	-0.03210	DET	0.076	mg/L	J

N = 4

----------- Site=Southeast Runway Method=Inorganics Analyte=Arsenic -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW6010	L	0.0320	0.0320	DET	0.0468	mg/L	J
1995	SW6010	L	0.0104	0.0104	DET	0.0468	mg/L	J
1995	SW6010	L	-0.0326	-0.0326	DET	0.0468	mg/L	J
1995	SW6010	L	0.0111	0.0111	DET	0.0468	mg/L	J

N = 4

----------- Site=Southeast Runway Method=Inorganics Analyte=Barium ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW6010	L	0.632	0.632	DET	.00086	mg/L	
1995	SW6010	L	0.164	0.164	DET	.00086	mg/L	
1995	SW6010	L	0.197	0.197	DET	.00086	mg/L	
1995	SW6010	L	0.148	0.148	DET	.00086	mg/L	

N = 4

---------- Site=Southeast Runway Method=Inorganics Analyte=Beryllium ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW6010	L	.00394	.00394	DET	.00051	mg/L	
1995	SW6010	L	.00000	.00000	DET	.00051	mg/L	J
1995	SW6010	L	.00025	.00025	DET	.00051	mg/L	J

a. Random uniform numbers, between zero and the lesser of the minimum result a

---------- Site=Southeast Runway Method=Inorganics Analyte=Beryllium ----------
(continued)

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW6010	L	.00274	.00274	DET	.00051	mg/L	

N = 4

----------- Site=Southeast Runway Method=Inorganics Analyte=Cadmium -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW6010	L	.00851	.00851	DET	.00386	mg/L	B
1995	SW6010	L	.00143	.00143	DET	.00386	mg/L	BJ
1995	SW6010	L	.00323	.00323	DET	.00386	mg/L	BJ
1995	SW6010	L	.00424	.00424	DET	.00386	mg/L	B

N = 4

----------- Site=Southeast Runway Method=Inorganics Analyte=Calcium -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW6010	L	217.0	217.0	DET	0.0175	mg/L	
1995	SW6010	L	195.0	195.0	DET	0.0175	mg/L	
1995	SW6010	L	87.6	87.6	DET	0.0175	mg/L	
1995	SW6010	L	147.0	147.0	DET	0.0175	mg/L	

N = 4

---------- Site=Southeast Runway Method=Inorganics Analyte=Chromium -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW6010	L	.00220	.00220	DET	.00524	mg/L	J
1995	SW6010	L	.00155	.00155	DET	.00524	mg/L	J
1995	SW6010	L	.00175	.00175	DET	.00524	mg/L	J
1995	SW6010	L	.00152	.00152	DET	.00524	mg/L	J

N = 4

a. Random uniform numbers, between zero and the lesser of the minimum result a

------------ Site=Southeast Runway Method=Inorganics Analyte=Cobalt ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW6010	L	0.02280	0.02280	DET	.00407	mg/L	
1995	SW6010	L	0.00176	0.00176	DET	.00407	mg/L	J
1995	SW6010	L	0.00000	0.00000	DET	.00407	mg/L	J
1995	SW6010	L	-0.00531	-0.00531	DET	.00407	mg/L	J

N = 4

------------ Site=Southeast Runway Method=Inorganics Analyte=Copper ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW6010	L	.00000	.00000	DET	.00916	mg/L	J
1995	SW6010	L	.00255	.00255	DET	.00916	mg/L	J
1995	SW6010	L	.00714	.00714	DET	.00916	mg/L	J
1995	SW6010	L	.00255	.00255	DET	.00916	mg/L	J

N = 4

------------ Site=Southeast Runway Method=Inorganics Analyte=Iron ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW6010	L	22.0000	22.0000	DET	.00452	mg/L	
1995	SW6010	L	0.1240	0.1240	DET	.00452	mg/L	
1995	SW6010	L	0.0107	0.0107	DET	.00452	mg/L	B
1995	SW6010	L	0.0235	0.0235	DET	.00452	mg/L	B

N = 4

------------ Site=Southeast Runway Method=Inorganics Analyte=Lead ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW7421	L	-.00115	-.00115	DET	.000957	mg/L	J
1995	SW7421	L	-.00102	-.00102	DET	.000957	mg/L	J
1995	SW7421	L	-.00019	-.00019	DET	.000957	mg/L	J

a. Random uniform numbers, between zero and the lesser of the minimum result a

------------ Site=Southeast Runway Method=Inorganics Analyte=Lead ------------
(continued)

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW7421	L	-.00118	-.00118	DET	.000957	mg/L	J

N = 4

---------- Site=Southeast Runway Method=Inorganics Analyte=Magnesium ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW6010	L	63.70	63.70	DET	0.0479	mg/L	
1995	SW6010	L	44.80	44.80	DET	0.0479	mg/L	
1995	SW6010	L	9.68	9.68	DET	0.0479	mg/L	
1995	SW6010	L	33.10	33.10	DET	0.0479	mg/L	

N = 4

---------- Site=Southeast Runway Method=Inorganics Analyte=Manganese ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW6010	L	31.2000	31.2000	DET	.00155	mg/L	
1995	SW6010	L	0.2240	0.2240	DET	.00155	mg/L	
1995	SW6010	L	0.0272	0.0272	DET	.00155	mg/L	
1995	SW6010	L	0.1520	0.1520	DET	.00155	mg/L	

N = 4

--------- Site=Southeast Runway Method=Inorganics Analyte=Molybdenum ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW6010	L	-0.01530	-0.01530	DET	.00739	mg/L	J
1995	SW6010	L	-0.01730	-0.01730	DET	.00739	mg/L	J
1995	SW6010	L	0.00652	0.00652	DET	.00739	mg/L	J
1995	SW6010	L	0.00877	0.00877	DET	.00739	mg/L	

N = 4

a. Random uniform numbers, between zero and the lesser of the minimum result a

----------- Site=Southeast Runway Method=Inorganics Analyte=Nickel ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW6010	L	0.04180	0.04180	DET	0.0141	mg/L	
1995	SW6010	L	0.01290	0.01290	DET	0.0141	mg/L	J
1995	SW6010	L	-0.00697	-0.00697	DET	0.0141	mg/L	J
1995	SW6010	L	0.01100	0.01100	DET	0.0141	mg/L	J

N = 4

---------- Site=Southeast Runway Method=Inorganics Analyte=Potassium ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW6010	L	5.75	5.75	DET	0.822	mg/L	
1995	SW6010	L	3.20	3.20	DET	0.822	mg/L	
1995	SW6010	L	9.05	9.05	DET	0.822	mg/L	
1995	SW6010	L	2.74	2.74	DET	0.822	mg/L	

N = 4

---------- Site=Southeast Runway Method=Inorganics Analyte=Selenium -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW6010	L	0.1420	0.1420	DET	0.0891	mg/L	
1995	SW6010	L	0.0585	0.0585	DET	0.0891	mg/L	J
1995	SW6010	L	0.0510	0.0510	DET	0.0891	mg/L	J
1995	SW6010	L	-0.0728	-0.0728	DET	0.0891	mg/L	J

N = 4

----------- Site=Southeast Runway Method=Inorganics Analyte=Silver ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW6010	L	-.00430	-.00430	DET	.00519	mg/L	J
1995	SW6010	L	-.00163	-.00163	DET	.00519	mg/L	J
1995	SW6010	L	-.00082	-.00082	DET	.00519	mg/L	J

a. Random uniform numbers, between zero and the lesser of the minimum result a

----------- Site=Southeast Runway Method=Inorganics Analyte=Silver ------------
(continued)

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW6010	L	-.00331	-.00331	DET	.00519	mg/L	J

N = 4

----------- Site=Southeast Runway Method=Inorganics Analyte=Sodium ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW6010	L	11.40	11.40	DET	0.0401	mg/L	
1995	SW6010	L	5.92	5.92	DET	0.0401	mg/L	
1995	SW6010	L	1.43	1.43	DET	0.0401	mg/L	
1995	SW6010	L	5.55	5.55	DET	0.0401	mg/L	

N = 4

---------- Site=Southeast Runway Method=Inorganics Analyte=Thallium -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW6010	L	-0.1670	-0.1670	DET	0.0833	mg/L	J
1995	SW6010	L	0.0128	0.0128	DET	0.0833	mg/L	J
1995	SW6010	L	0.0340	0.0340	DET	0.0833	mg/L	J
1995	SW6010	L	0.2040	0.2040	DET	0.0833	mg/L	

N = 4

---------- Site=Southeast Runway Method=Inorganics Analyte=Vanadium -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW6010	L	0.00346	0.00346	DET	.00454	mg/L	J
1995	SW6010	L	-.00043	-.00043	DET	.00454	mg/L	J
1995	SW6010	L	0.00003	0.00003	DET	.00454	mg/L	J
1995	SW6010	L	-.00257	-.00257	DET	.00454	mg/L	J

N = 4

a. Random uniform numbers, between zero and the lesser of the minimum result a

------------ Site=Southeast Runway Method=Inorganics Analyte=Zinc -------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW6010	L	-.00463	-.00463	DET	.00402	mg/L	J
1995	SW6010	L	-.00131	-.00131	DET	.00402	mg/L	J
1995	SW6010	L	0.00000	0.00000	DET	.00402	mg/L	J
1995	SW6010	L	-.00078	-.00078	DET	.00402	mg/L	J

N = 4

--- Site=Southeast Runway Method=Organics Analyte=1,1,1,2-Tetrachloroethane ---

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8260	L	.	.00035468	ND	.000399	mg/L	
1995	SW8260	L	.	.00004096	ND	.000133	mg/L	
1995	SW8260	L	.	.00008902	ND	.000133	mg/L	
1995	SW8260	L	.	.00011202	ND	.000133	mg/L	

N = 4

----- Site=Southeast Runway Method=Organics Analyte=1,1,1-Trichloroethane -----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8260	L	.	.00013121	ND	.00036	mg/L	
1995	SW8260	L	.	.00011926	ND	.00012	mg/L	
1995	SW8260	L	.	.00003667	ND	.00012	mg/L	
1995	SW8260	L	.	.00010583	ND	.00012	mg/L	

N = 4

--- Site=Southeast Runway Method=Organics Analyte=1,1,2,2-Tetrachloroethane ---

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8260	L	.	.000083190	ND	.0002120	mg/L	
1995	SW8260	L	.	.000054674	ND	.0000708	mg/L	
1995	SW8260	L	.	.000039227	ND	.0000708	mg/L	

a. Random uniform numbers, between zero and the lesser of the minimum result a

--- Site=Southeast Runway Method=Organics Analyte=1,1,2,2-Tetrachloroethane ---
(continued)

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8260	L	.	.000033758	ND	.0000708	mg/L	

N = 4

----- Site=Southeast Runway Method=Organics Analyte=1,1,2-Trichloroethane -----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8260	L	.	.00016995	ND	.0002030	mg/L	
1995	SW8260	L	.	.00002618	ND	.0000678	mg/L	
1995	SW8260	L	.	.00000807	ND	.0000678	mg/L	
1995	SW8260	L	.	.00006306	ND	.0000678	mg/L	

N = 4

------ Site=Southeast Runway Method=Organics Analyte=1,1-Dichloroethane -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8260	L	.	.000023140	ND	.0001940	mg/L	
1995	SW8260	L	.	.000048814	ND	.0000646	mg/L	
1995	SW8260	L	.	.000063174	ND	.0000646	mg/L	
1995	SW8260	L	.	.000036912	ND	.0000646	mg/L	

N = 4

------ Site=Southeast Runway Method=Organics Analyte=1,1-Dichloroethene -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8260	L	.	.00013962	ND	.000636	mg/L	
1995	SW8260	L	.	.00002001	ND	.000212	mg/L	
1995	SW8260	L	.	.00002001	ND	.000212	mg/L	
1995	SW8260	L	.	.00004822	ND	.000212	mg/L	

N = 4

a. Random uniform numbers, between zero and the lesser of the minimum result a

---- Site=Southeast Runway Method=Organics Analyte=1,2,3-Trichloropropane -----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8260	L	.	.00016039	ND	.0002710	mg/L	
1995	SW8260	L	.	.00004766	ND	.0000902	mg/L	
1995	SW8260	L	.	.00006098	ND	.0000902	mg/L	
1995	SW8260	L	.	.00006531	ND	.0000902	mg/L	

N = 4

---- Site=Southeast Runway Method=Organics Analyte=1,2,4-Trichlorobenzene -----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.00076606	ND	.000996	mg/L	
1995	SW8270	L	.	.00029630	ND	.001040	mg/L	
1995	SW8270	L	.	.00008070	ND	.001050	mg/L	
1995	SW8270	L	.	.00012926	ND	.001010	mg/L	

N = 4

------ Site=Southeast Runway Method=Organics Analyte=1,2-Dichlorobenzene ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8260	L	.	.00051286	ND	.000546	mg/L	
1995	SW8260	L	.	.00008024	ND	.000182	mg/L	
1995	SW8260	L	.	.00007076	ND	.000182	mg/L	
1995	SW8260	L	.	.00014416	ND	.000182	mg/L	

N = 4

------ Site=Southeast Runway Method=Organics Analyte=1,2-Dichloroethane -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8260	L	.00107	.0010700	DET	.0001440	mg/L	
1995	SW8260	L	.	.0000304	ND	.0000481	mg/L	
1995	SW8260	L	.	.0000424	ND	.0000481	mg/L	

a. Random uniform numbers, between zero and the lesser of the minimum result a

------ Site=Southeast Runway Method=Organics Analyte=1,2-Dichloroethane -------
(continued)

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8260	L	.00455	.00455	DET	.0000481	mg/L	

N = 4

------ Site=Southeast Runway Method=Organics Analyte=1,2-Dichloropropane ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8260	L	.	.000079315	ND	.000132	mg/L	
1995	SW8260	L	.	.000004603	ND	.000044	mg/L	
1995	SW8260	L	.	.000007187	ND	.000044	mg/L	
1995	SW8260	L	.	.000028407	ND	.000044	mg/L	

N = 4

------ Site=Southeast Runway Method=Organics Analyte=1,3-Dichlorobenzene ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8260	L	.	.00064416	ND	.000684	mg/L	
1995	SW8260	L	.	.00007722	ND	.000228	mg/L	
1995	SW8260	L	.	.00020690	ND	.000228	mg/L	
1995	SW8260	L	.	.00012374	ND	.000228	mg/L	

N = 4

------ Site=Southeast Runway Method=Organics Analyte=1,4-Dichlorobenzene ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8260	L	.	.00060516	ND	.000648	mg/L	
1995	SW8260	L	.	.00000451	ND	.000216	mg/L	
1995	SW8260	L	.	.00005137	ND	.000216	mg/L	
1995	SW8260	L	.	.00008937	ND	.000216	mg/L	

N = 4

a. Random uniform numbers, between zero and the lesser of the minimum result a

-------- Site=Southeast Runway Method=Organics Analyte=1-Chlorohexane ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8260	L	.	.00034410	ND	.001070	mg/L	
1995	SW8260	L	.	.00034843	ND	.000357	mg/L	
1995	SW8260	L	.	.00016851	ND	.000357	mg/L	
1995	SW8260	L	.	.00031263	ND	.000357	mg/L	

N = 4

----- Site=Southeast Runway Method=Organics Analyte=2,4,5-Trichlorophenol -----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.00004853	ND	.000812	mg/L	
1995	SW8270	L	.	.00069954	ND	.000846	mg/L	
1995	SW8270	L	.	.00083468	ND	.000855	mg/L	
1995	SW8270	L	.	.00023865	ND	.000824	mg/L	

N = 4

----- Site=Southeast Runway Method=Organics Analyte=2,4,6-Trichlorophenol -----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.00047115	ND	.000976	mg/L	
1995	SW8270	L	.	.00084380	ND	.001020	mg/L	
1995	SW8270	L	.	.00038886	ND	.001030	mg/L	
1995	SW8270	L	.	.00012834	ND	.000991	mg/L	

N = 4

------ Site=Southeast Runway Method=Organics Analyte=2,4-Dichlorophenol -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.00077088	ND	.00109	mg/L	
1995	SW8270	L	.	.00090584	ND	.00114	mg/L	
1995	SW8270	L	.	.00020816	ND	.00115	mg/L	

a. Random uniform numbers, between zero and the lesser of the minimum result a

------ Site=Southeast Runway Method=Organics Analyte=2,4-Dichlorophenol -------
(continued)

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.00020433	ND	.00111	mg/L	

N = 4

------ Site=Southeast Runway Method=Organics Analyte=2,4-Dimethylphenol -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.00067001	ND	.00103	mg/L	
1995	SW8270	L	.	.00074510	ND	.00107	mg/L	
1995	SW8270	L	.	.00047896	ND	.00108	mg/L	
1995	SW8270	L	.	.00007328	ND	.00105	mg/L	

N = 4

------- Site=Southeast Runway Method=Organics Analyte=2,4-Dinitrophenol -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.0025642	ND	.00259	mg/L	
1995	SW8270	L	.	.0013033	ND	.00270	mg/L	
1995	SW8270	L	.	.0009739	ND	.00273	mg/L	
1995	SW8270	L	.	.0021160	ND	.00263	mg/L	

N = 4

------ Site=Southeast Runway Method=Organics Analyte=2,4-Dinitrotoluene -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.00006544	ND	.000991	mg/L	
1995	SW8270	L	.	.00006373	ND	.001030	mg/L	
1995	SW8270	L	.	.00099646	ND	.001040	mg/L	
1995	SW8270	L	.	.00078377	ND	.001010	mg/L	

N = 4

a. Random uniform numbers, between zero and the lesser of the minimum result a

------ Site=Southeast Runway Method=Organics Analyte=2,6-Dinitrotoluene -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.00042567	ND	.000805	mg/L	
1995	SW8270	L	.	.00007953	ND	.000839	mg/L	
1995	SW8270	L	.	.00053276	ND	.000847	mg/L	
1995	SW8270	L	.	.00009131	ND	.000817	mg/L	

N = 4

-------- Site=Southeast Runway Method=Organics Analyte=2-Butanone(MEK) --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8260	L	.	.0020252	ND	.00387	mg/L	
1995	SW8260	L	.	.0005578	ND	.00129	mg/L	
1995	SW8260	L	.	.0011516	ND	.00129	mg/L	
1995	SW8260	L	.	.0002448	ND	.00129	mg/L	

N = 4

--- Site=Southeast Runway Method=Organics Analyte=2-Chloroethyl vinyl ether ---

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8260	L	.	.000066223	ND	.000393	mg/L	
1995	SW8260	L	.	.000054286	ND	.000131	mg/L	
1995	SW8260	L	.	.000088976	ND	.000131	mg/L	
1995	SW8260	L	.	.000013492	ND	.000131	mg/L	

N = 4

------ Site=Southeast Runway Method=Organics Analyte=2-Chloronaphthalene ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.00042913	ND	.000796	mg/L	
1995	SW8270	L	.	.00077006	ND	.000829	mg/L	
1995	SW8270	L	.	.00074169	ND	.000838	mg/L	

a. Random uniform numbers, between zero and the lesser of the minimum result a

------ Site=Southeast Runway Method=Organics Analyte=2-Chloronaphthalene ------
(continued)

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.00055283	ND	.000808	mg/L	

N = 4

------- Site=Southeast Runway Method=Organics Analyte=2-Chlorophenol ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.00029896	ND	.000799	mg/L	
1995	SW8270	L	.	.00050863	ND	.000832	mg/L	
1995	SW8270	L	.	.00062721	ND	.000841	mg/L	
1995	SW8270	L	.	.00051697	ND	.000811	mg/L	

N = 4

---------- Site=Southeast Runway Method=Organics Analyte=2-Hexanone -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8260	L	.	.00069226	ND	.001040	mg/L	
1995	SW8260	L	.	.00013580	ND	.000347	mg/L	
1995	SW8260	L	.	.00030915	ND	.000347	mg/L	
1995	SW8260	L	.	.00033669	ND	.000347	mg/L	

N = 4

------ Site=Southeast Runway Method=Organics Analyte=2-Methylnaphthalene ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	0.0989	0.098900	DET	.000924	mg/L	
1995	SW8270	L	.	0.000283	ND	.000962	mg/L	
1995	SW8270	L	.	0.000848	ND	.000973	mg/L	
1995	SW8270	L	.	0.000769	ND	.000938	mg/L	

N = 4

a. Random uniform numbers, between zero and the lesser of the minimum result a

--- Site=Southeast Runway Method=Organics Analyte=2-Methylphenol(o-cresol) ----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.00026674	ND	.000700	mg/L	
1995	SW8270	L	.	.00038123	ND	.000729	mg/L	
1995	SW8270	L	.	.00048124	ND	.000737	mg/L	
1995	SW8270	L	.	.00006614	ND	.000711	mg/L	

N = 4

-------- Site=Southeast Runway Method=Organics Analyte=2-Nitroaniline ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.00024046	ND	.000951	mg/L	
1995	SW8270	L	.	.00076133	ND	.000991	mg/L	
1995	SW8270	L	.	.00087164	ND	.001000	mg/L	
1995	SW8270	L	.	.00083771	ND	.000965	mg/L	

N = 4

--------- Site=Southeast Runway Method=Organics Analyte=2-Nitrophenol ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.00022156	ND	.000884	mg/L	
1995	SW8270	L	.	.00014255	ND	.000921	mg/L	
1995	SW8270	L	.	.00015437	ND	.000931	mg/L	
1995	SW8270	L	.	.00076662	ND	.000897	mg/L	

N = 4

---- Site=Southeast Runway Method=Organics Analyte=3,3'-Dichlorobenzidine -----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.00001637	ND	.000647	mg/L	
1995	SW8270	L	.	.00025698	ND	.000674	mg/L	
1995	SW8270	L	.	.00067129	ND	.000681	mg/L	

a. Random uniform numbers, between zero and the lesser of the minimum result a

---- Site=Southeast Runway Method=Organics Analyte=3,3'-Dichlorobenzidine -----
(continued)

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.00032176	ND	.000657	mg/L	

N = 4

-------- Site=Southeast Runway Method=Organics Analyte=3-Nitroaniline ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.00079983	ND	.00108	mg/L	
1995	SW8270	L	.	.00070373	ND	.00112	mg/L	
1995	SW8270	L	.	.00078077	ND	.00114	mg/L	
1995	SW8270	L	.	.00041826	ND	.00110	mg/L	

N = 4

-- Site=Southeast Runway Method=Organics Analyte=4,6-Dinitro-2-methylphenol ---

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.00059303	ND	.00106	mg/L	
1995	SW8270	L	.	.00009500	ND	.00110	mg/L	
1995	SW8270	L	.	.00018345	ND	.00112	mg/L	
1995	SW8270	L	.	.00001404	ND	.00108	mg/L	

N = 4

-- Site=Southeast Runway Method=Organics Analyte=4-Bromophenyl phenyl ether ---

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.0035562	ND	.00608	mg/L	
1995	SW8270	L	.	.0045865	ND	.00633	mg/L	
1995	SW8270	L	.	.0057717	ND	.00640	mg/L	
1995	SW8270	L	.	.0030734	ND	.00617	mg/L	

N = 4

a. Random uniform numbers, between zero and the lesser of the minimum result a

---- Site=Southeast Runway Method=Organics Analyte=4-Chloro-3-methylphenol ----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.00078817	ND	.000866	mg/L	
1995	SW8270	L	.	.00001988	ND	.000902	mg/L	
1995	SW8270	L	.	.00016781	ND	.000912	mg/L	
1995	SW8270	L	.	.00049483	ND	.000879	mg/L	

N = 4

-------- Site=Southeast Runway Method=Organics Analyte=4-Chloroaniline --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.00027392	ND	.000963	mg/L	
1995	SW8270	L	.	.00093985	ND	.001000	mg/L	
1995	SW8270	L	.	.00092027	ND	.001010	mg/L	
1995	SW8270	L	.	.00083008	ND	.000978	mg/L	

N = 4

-- Site=Southeast Runway Method=Organics Analyte=4-Chlorophenyl phenyl ether --

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.0008462	ND	.000985	mg/L	
1995	SW8270	L	.	.0003328	ND	.001030	mg/L	
1995	SW8270	L	.	.0010303	ND	.001040	mg/L	
1995	SW8270	L	.	.0001373	ND	.001000	mg/L	

N = 4

-- Site=Southeast Runway Method=Organics Analyte=4-Methyl-2-pentanone(MIBK) ---

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8260	L	.	.00092204	ND	.000948	mg/L	
1995	SW8260	L	.	.00018449	ND	.000316	mg/L	
1995	SW8260	L	.	.00017106	ND	.000316	mg/L	

a. Random uniform numbers, between zero and the lesser of the minimum result a

-- Site=Southeast Runway Method=Organics Analyte=4-Methyl-2-pentanone(MIBK) ---
(continued)

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8260	L	.	.00010545	ND	.000316	mg/L	

N = 4

- Site=Southeast Runway Method=Organics Analyte=4-Methylphenol/3-Methylphenol -

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.00057654	ND	.000753	mg/L	
1995	SW8270	L	.	.00063221	ND	.000784	mg/L	
1995	SW8270	L	.	.00004538	ND	.000793	mg/L	
1995	SW8270	L	.	.00075567	ND	.000764	mg/L	

N = 4

-------- Site=Southeast Runway Method=Organics Analyte=4-Nitroaniline ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.00065179	ND	.00120	mg/L	
1995	SW8270	L	.	.00018611	ND	.00125	mg/L	
1995	SW8270	L	.	.00038521	ND	.00126	mg/L	
1995	SW8270	L	.	.00053142	ND	.00122	mg/L	

N = 4

--------- Site=Southeast Runway Method=Organics Analyte=4-Nitrophenol ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.00065215	ND	.00136	mg/L	
1995	SW8270	L	.	.00016189	ND	.00142	mg/L	
1995	SW8270	L	.	.00064296	ND	.00143	mg/L	
1995	SW8270	L	.	.00013561	ND	.00138	mg/L	

N = 4

a. Random uniform numbers, between zero and the lesser of the minimum result a

--------- Site=Southeast Runway Method=Organics Analyte=Acenaphthene ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.000792	.00079200	DET	.00101	mg/L	J
1995	SW8270	L	.	.00033053	ND	.00105	mg/L	
1995	SW8270	L	.	.00072440	ND	.00106	mg/L	
1995	SW8270	L	.	.00044282	ND	.00103	mg/L	

N = 4

------- Site=Southeast Runway Method=Organics Analyte=Acenaphthylene ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.00015610	ND	.000880	mg/L	
1995	SW8270	L	.	.00089737	ND	.000917	mg/L	
1995	SW8270	L	.	.00054972	ND	.000926	mg/L	
1995	SW8270	L	.	.00021785	ND	.000893	mg/L	

N = 4

------------ Site=Southeast Runway Method=Organics Analyte=Acetone ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8260	L	0.00786	0.00786	DET	.0069	mg/L	B
1995	SW8260	L	0.00280	0.00280	DET	.0023	mg/L	B
1995	SW8260	L	0.00259	0.00259	DET	.0023	mg/L	B
1995	SW8260	L	0.01350	0.01350	DET	.0023	mg/L	B

N = 4

---------- Site=Southeast Runway Method=Organics Analyte=Anthracene -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.00065042	ND	.000751	mg/L	
1995	SW8270	L	.	.00036585	ND	.000782	mg/L	
1995	SW8270	L	.	.00052983	ND	.000791	mg/L	

a. Random uniform numbers, between zero and the lesser of the minimum result a

---------- Site=Southeast Runway Method=Organics Analyte=Anthracene -----------
(continued)

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.00046671	ND	.000762	mg/L	

N = 4

------------ Site=Southeast Runway Method=Organics Analyte=Benzene ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8260	L	0.058100	0.058100	DET	.000366	mg/L	
1995	SW8260	L	.	0.000006	ND	.000122	mg/L	
1995	SW8260	L	.	0.000028	ND	.000122	mg/L	
1995	SW8260	L	0.000051	0.000051	DET	.000122	mg/L	J

N = 4

------ Site=Southeast Runway Method=Organics Analyte=Benzo(a)anthracene -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.00030936	ND	.000762	mg/L	
1995	SW8270	L	.	.00068875	ND	.000794	mg/L	
1995	SW8270	L	.	.00066379	ND	.000802	mg/L	
1995	SW8270	L	.	.00003860	ND	.000774	mg/L	

N = 4

-------- Site=Southeast Runway Method=Organics Analyte=Benzo(a)pyrene ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.00037407	ND	.000585	mg/L	
1995	SW8270	L	.	.00049740	ND	.000609	mg/L	
1995	SW8270	L	.	.00051041	ND	.000616	mg/L	
1995	SW8270	L	.	.00055098	ND	.000594	mg/L	

N = 4

a. Random uniform numbers, between zero and the lesser of the minimum result a

----- Site=Southeast Runway Method=Organics Analyte=Benzo(b)fluoranthene ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.00058229	ND	.000698	mg/L	
1995	SW8270	L	.	.00000104	ND	.000727	mg/L	
1995	SW8270	L	.	.00065585	ND	.000735	mg/L	
1995	SW8270	L	.	.00000996	ND	.000709	mg/L	

N = 4

----- Site=Southeast Runway Method=Organics Analyte=Benzo(g,h,i)perylene ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.00030455	ND	.000676	mg/L	
1995	SW8270	L	.	.00064987	ND	.000704	mg/L	
1995	SW8270	L	.	.00059083	ND	.000712	mg/L	
1995	SW8270	L	.	.00015526	ND	.000686	mg/L	

N = 4

----- Site=Southeast Runway Method=Organics Analyte=Benzo(k)fluoranthene ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.0002166	ND	.00116	mg/L	
1995	SW8270	L	.	.0009151	ND	.00121	mg/L	
1995	SW8270	L	.	.0012142	ND	.00122	mg/L	
1995	SW8270	L	.	.0007613	ND	.00118	mg/L	

N = 4

--------- Site=Southeast Runway Method=Organics Analyte=Benzoic acid ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.0032056	ND	.00603	mg/L	
1995	SW8270	L	.	.0020894	ND	.00628	mg/L	
1995	SW8270	L	.	.0000553	ND	.00635	mg/L	

a. Random uniform numbers, between zero and the lesser of the minimum result a

--------- Site=Southeast Runway Method=Organics Analyte=Benzoic acid ----------
(continued)

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.0026324	ND	.00612	mg/L	

N = 4

-------- Site=Southeast Runway Method=Organics Analyte=Benzyl alcohol ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.0000382	ND	.000642	mg/L	
1995	SW8270	L	.	.0004036	ND	.000669	mg/L	
1995	SW8270	L	.	.0006039	ND	.000676	mg/L	
1995	SW8270	L	.00313	.0031300	DET	.000652	mg/L	

N = 4

--------- Site=Southeast Runway Method=Organics Analyte=Bromobenzene ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8260	L	.	.00036425	ND	.000501	mg/L	
1995	SW8260	L	.	.00009049	ND	.000167	mg/L	
1995	SW8260	L	.	.00011179	ND	.000167	mg/L	
1995	SW8260	L	.	.00006069	ND	.000167	mg/L	

N = 4

----- Site=Southeast Runway Method=Organics Analyte=Bromodichloromethane ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8260	L	.	.000063789	ND	.0001390	mg/L	
1995	SW8260	L	.	.000015844	ND	.0000462	mg/L	
1995	SW8260	L	.	.000021575	ND	.0000462	mg/L	
1995	SW8260	L	.	.000037672	ND	.0000462	mg/L	

N = 4

a. Random uniform numbers, between zero and the lesser of the minimum result a

--------- Site=Southeast Runway Method=Organics Analyte=Bromomethane ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8260	L	.	.000053202	ND	.00015	mg/L	
1995	SW8260	L	.	.000036646	ND	.00005	mg/L	
1995	SW8260	L	.	.000020407	ND	.00005	mg/L	
1995	SW8260	L	.	.000008459	ND	.00005	mg/L	

N = 4

----- Site=Southeast Runway Method=Organics Analyte=Butylbenzylphthalate ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.00063454	ND	.000962	mg/L	
1995	SW8270	L	.	.00036679	ND	.001000	mg/L	
1995	SW8270	L	.	.00053425	ND	.001010	mg/L	
1995	SW8270	L	.	.00027777	ND	.000977	mg/L	

N = 4

------- Site=Southeast Runway Method=Organics Analyte=Carbon disulfide --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8260	L	.	.00019525	ND	.00057	mg/L	
1995	SW8260	L	.	.00005561	ND	.00019	mg/L	
1995	SW8260	L	.	.00004704	ND	.00019	mg/L	
1995	SW8260	L	.	.00002469	ND	.00019	mg/L	

N = 4

----- Site=Southeast Runway Method=Organics Analyte=Carbon tetrachloride ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8260	L	.	.00034754	ND	.000393	mg/L	
1995	SW8260	L	.	.00005935	ND	.000131	mg/L	
1995	SW8260	L	.	.00001624	ND	.000131	mg/L	

a. Random uniform numbers, between zero and the lesser of the minimum result a

----- Site=Southeast Runway Method=Organics Analyte=Carbon tetrachloride ------
(continued)

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8260	L	.	.000085780	ND	.000131	mg/L	

N = 4

--------- Site=Southeast Runway Method=Organics Analyte=Chlorobenzene ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8260	L	.	.00002406	ND	.000615	mg/L	
1995	SW8260	L	.	.00016579	ND	.000205	mg/L	
1995	SW8260	L	.	.00010295	ND	.000205	mg/L	
1995	SW8260	L	.	.00000838	ND	.000205	mg/L	

N = 4

--------- Site=Southeast Runway Method=Organics Analyte=Chloroethane ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8260	L	.	.000021043	ND	.0002690	mg/L	
1995	SW8260	L	.	.000054052	ND	.0000898	mg/L	
1995	SW8260	L	.	.000021548	ND	.0000898	mg/L	
1995	SW8260	L	.0000589	.000058900	DET	.0000898	mg/L	J

N = 4

---------- Site=Southeast Runway Method=Organics Analyte=Chloroform -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8260	L	.	.000007229	ND	.0002960	mg/L	
1995	SW8260	L	.	.000018262	ND	.0000985	mg/L	
1995	SW8260	L	.	.000021048	ND	.0000985	mg/L	
1995	SW8260	L	.0000388	.000038800	DET	.0000985	mg/L	J

N = 4

a. Random uniform numbers, between zero and the lesser of the minimum result a

--------- Site=Southeast Runway Method=Organics Analyte=Chloromethane ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8260	L	.	.0001899	ND	.0002680	mg/L	
1995	SW8260	L	.	.0000116	ND	.0000893	mg/L	
1995	SW8260	L	.	.0000668	ND	.0000893	mg/L	
1995	SW8260	L	.00119	.0011900	DET	.0000893	mg/L	

N = 4

----------- Site=Southeast Runway Method=Organics Analyte=Chrysene ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.00066648	ND	.000858	mg/L	
1995	SW8270	L	.	.00010220	ND	.000894	mg/L	
1995	SW8270	L	.	.00072429	ND	.000903	mg/L	
1995	SW8270	L	.	.00018113	ND	.000871	mg/L	

N = 4

------ Site=Southeast Runway Method=Organics Analyte=Di-n-octylphthalate ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.00013867	ND	.000397	mg/L	
1995	SW8270	L	.	.00016116	ND	.000414	mg/L	
1995	SW8270	L	.	.00023977	ND	.000418	mg/L	
1995	SW8270	L	.	.00017316	ND	.000403	mg/L	

N = 4

----- Site=Southeast Runway Method=Organics Analyte=Dibenz(a,h)anthracene -----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.00059914	ND	.000648	mg/L	
1995	SW8270	L	.	.00046515	ND	.000675	mg/L	
1995	SW8270	L	.	.00052231	ND	.000682	mg/L	

a. Random uniform numbers, between zero and the lesser of the minimum result a

----- Site=Southeast Runway Method=Organics Analyte=Dibenz(a,h)anthracene -----
(continued)

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.00052740	ND	.000658	mg/L	

N = 4

--------- Site=Southeast Runway Method=Organics Analyte=Dibenzofuran ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.00002387	ND	.000865	mg/L	
1995	SW8270	L	.	.00039701	ND	.000901	mg/L	
1995	SW8270	L	.	.00053668	ND	.000911	mg/L	
1995	SW8270	L	.	.00018901	ND	.000878	mg/L	

N = 4

---- Site=Southeast Runway Method=Organics Analyte=Dibromochloromethane ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8260	L	.	.00018442	ND	.000261	mg/L	
1995	SW8260	L	.	.00001793	ND	.000087	mg/L	
1995	SW8260	L	.	.00000492	ND	.000087	mg/L	
1995	SW8260	L	.	.00007440	ND	.000087	mg/L	

N = 4

-------- Site=Southeast Runway Method=Organics Analyte=Dibromomethane ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8260	L	.000559	.000559	DET	.000321	mg/L	B
1995	SW8260	L	.000189	.000189	DET	.000107	mg/L	B
1995	SW8260	L	.000217	.000217	DET	.000107	mg/L	B
1995	SW8260	L	.000217	.000217	DET	.000107	mg/L	B

N = 4

a. Random uniform numbers, between zero and the lesser of the minimum result a

------- Site=Southeast Runway Method=Organics Analyte=Dibutyl phthalate -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.000476	.00047600	DET	.000873	mg/L	J
1995	SW8270	L	.	.00002921	ND	.000909	mg/L	
1995	SW8270	L	.	.00001931	ND	.000919	mg/L	
1995	SW8270	L	.	.00036749	ND	.000886	mg/L	

N = 4

----- Site=Southeast Runway Method=Organics Analyte=Diesel Range Organics -----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	AK102	L	9.30	9.30	DET	0.1	mg/L	
1995	AK102	L	0.77	0.77	DET	0.1	mg/L	
1995	AK102	L	0.71	0.71	DET	0.1	mg/L	
1995	AK102	L	0.33	0.33	DET	0.1	mg/L	

N = 4

------- Site=Southeast Runway Method=Organics Analyte=Diethylphthalate --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.00029354	ND	.000962	mg/L	
1995	SW8270	L	.	.00080788	ND	.001000	mg/L	
1995	SW8270	L	.	.00002999	ND	.001010	mg/L	
1995	SW8270	L	.	.00013135	ND	.000977	mg/L	

N = 4

------- Site=Southeast Runway Method=Organics Analyte=Dimethylphthalate -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.00036554	ND	.000808	mg/L	
1995	SW8270	L	.	.00012093	ND	.000842	mg/L	
1995	SW8270	L	.	.00039383	ND	.000851	mg/L	

a. Random uniform numbers, between zero and the lesser of the minimum result a

------- Site=Southeast Runway Method=Organics Analyte=Dimethylphthalate -------
(continued)

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.00074157	ND	.00082	mg/L	

N = 4

Site=Southeast Runway Method=Organics Analyte=Diphenylamine (N-Nitrosodiphenyla

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.00025970	ND	.000960	mg/L	
1995	SW8270	L	.	.00022228	ND	.001000	mg/L	
1995	SW8270	L	.	.00035985	ND	.001010	mg/L	
1995	SW8270	L	.	.00030068	ND	.000975	mg/L	

N = 4

--------- Site=Southeast Runway Method=Organics Analyte=Ethylbenzene ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8260	L	0.021600	0.021600	DET	.000738	mg/L	
1995	SW8260	L	.	0.000028	ND	.000246	mg/L	
1995	SW8260	L	.	0.000041	ND	.000246	mg/L	
1995	SW8260	L	0.000044	0.000044	DET	.000246	mg/L	J

N = 4

--------- Site=Southeast Runway Method=Organics Analyte=Fluoranthene ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.00009183	ND	.000751	mg/L	
1995	SW8270	L	.	.00059119	ND	.000782	mg/L	
1995	SW8270	L	.	.00062479	ND	.000791	mg/L	
1995	SW8270	L	.	.00057292	ND	.000762	mg/L	

N = 4

a. Random uniform numbers, between zero and the lesser of the minimum result a

----------- Site=Southeast Runway Method=Organics Analyte=Fluorene ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.00129	.0012900	DET	.00104	mg/L	
1995	SW8270	L	.	.0009825	ND	.00108	mg/L	
1995	SW8270	L	.	.0006232	ND	.00109	mg/L	
1995	SW8270	L	.	.0002688	ND	.00106	mg/L	

N = 4

---- Site=Southeast Runway Method=Organics Analyte=Gasoline Range Organics ----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	AK101	L	0.79	0.79000	DET	0.05	mg/L	
1995	AK101	L	.	0.00722	ND	0.05	mg/L	
1995	AK101	L	.	0.02458	ND	0.05	mg/L	
1995	AK101	L	.	0.03985	ND	0.05	mg/L	

N = 4

------- Site=Southeast Runway Method=Organics Analyte=Hexachlorobenzene -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.00009718	ND	.000656	mg/L	
1995	SW8270	L	.	.00014561	ND	.000683	mg/L	
1995	SW8270	L	.	.00052587	ND	.000691	mg/L	
1995	SW8270	L	.	.00037272	ND	.000666	mg/L	

N = 4

------ Site=Southeast Runway Method=Organics Analyte=Hexachlorobutadiene ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.00065198	ND	.00145	mg/L	
1995	SW8270	L	.	.00092476	ND	.00151	mg/L	
1995	SW8270	L	.	.00086762	ND	.00153	mg/L	

a. Random uniform numbers, between zero and the lesser of the minimum result a

------ Site=Southeast Runway Method=Organics Analyte=Hexachlorobutadiene ------
(continued)

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.00092391	ND	.00147	mg/L	

N = 4

--- Site=Southeast Runway Method=Organics Analyte=Hexachlorocyclopentadiene ---

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.0020238	ND	.00226	mg/L	
1995	SW8270	L	.	.0008882	ND	.00235	mg/L	
1995	SW8270	L	.	.0014228	ND	.00238	mg/L	
1995	SW8270	L	.	.0013085	ND	.00229	mg/L	

N = 4

------- Site=Southeast Runway Method=Organics Analyte=Hexachloroethane --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.00054307	ND	.00102	mg/L	
1995	SW8270	L	.	.00076311	ND	.00106	mg/L	
1995	SW8270	L	.	.00067302	ND	.00107	mg/L	
1995	SW8270	L	.	.00064053	ND	.00104	mg/L	

N = 4

---- Site=Southeast Runway Method=Organics Analyte=Indeno(1,2,3-cd)pyrene -----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.00039798	ND	.000551	mg/L	
1995	SW8270	L	.	.00038703	ND	.000574	mg/L	
1995	SW8270	L	.	.00033523	ND	.000580	mg/L	
1995	SW8270	L	.	.00035742	ND	.000559	mg/L	

N = 4

a. Random uniform numbers, between zero and the lesser of the minimum result a

---------- Site=Southeast Runway Method=Organics Analyte=Isophorone -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.00041112	ND	.000770	mg/L	
1995	SW8270	L	.	.00037603	ND	.000802	mg/L	
1995	SW8270	L	.	.00080302	ND	.000811	mg/L	
1995	SW8270	L	.	.00046031	ND	.000782	mg/L	

N = 4

------ Site=Southeast Runway Method=Organics Analyte=Methylene chloride -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8260	L	.001000	.001000	DET	.001270	mg/L	BJ
1995	SW8260	L	.000423	.000423	DET	.000423	mg/L	BJ
1995	SW8260	L	.000180	.000180	DET	.000423	mg/L	BJ
1995	SW8260	L	.000291	.000291	DET	.000423	mg/L	BJ

N = 4

---- Site=Southeast Runway Method=Organics Analyte=N-Nitrosodipropylamine -----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.00073497	ND	.000896	mg/L	
1995	SW8270	L	.	.00054087	ND	.000933	mg/L	
1995	SW8270	L	.	.00041234	ND	.000943	mg/L	
1995	SW8270	L	.	.00050069	ND	.000910	mg/L	

N = 4

---------- Site=Southeast Runway Method=Organics Analyte=Naphthalene ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	0.0807	0.080700	DET	.00100	mg/L	
1995	SW8270	L	.	0.000997	ND	.00104	mg/L	
1995	SW8270	L	.	0.000822	ND	.00105	mg/L	

a. Random uniform numbers, between zero and the lesser of the minimum result a

---------- Site=Southeast Runway Method=Organics Analyte=Naphthalene ----------
(continued)

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.00064273	ND	.00102	mg/L	

N = 4

--------- Site=Southeast Runway Method=Organics Analyte=Nitrobenzene ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.00033443	ND	.000756	mg/L	
1995	SW8270	L	.	.00053015	ND	.000787	mg/L	
1995	SW8270	L	.	.00052515	ND	.000796	mg/L	
1995	SW8270	L	.	.00061789	ND	.000768	mg/L	

N = 4

------- Site=Southeast Runway Method=Organics Analyte=Pentachlorophenol -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.00038274	ND	.000834	mg/L	
1995	SW8270	L	.	.00074445	ND	.000869	mg/L	
1995	SW8270	L	.	.00083172	ND	.000878	mg/L	
1995	SW8270	L	.	.00015321	ND	.000847	mg/L	

N = 4

--------- Site=Southeast Runway Method=Organics Analyte=Phenanthrene ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.000739	.00073900	DET	.000932	mg/L	J
1995	SW8270	L	.	.00049405	ND	.000971	mg/L	
1995	SW8270	L	.	.00052146	ND	.000981	mg/L	
1995	SW8270	L	.	.00009276	ND	.000946	mg/L	

N = 4

a. Random uniform numbers, between zero and the lesser of the minimum result a

------------ Site=Southeast Runway Method=Organics Analyte=Phenol ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.00007197	ND	.000416	mg/L	
1995	SW8270	L	.	.00033818	ND	.000433	mg/L	
1995	SW8270	L	.	.00041189	ND	.000438	mg/L	
1995	SW8270	L	.	.00028708	ND	.000422	mg/L	

N = 4

------------ Site=Southeast Runway Method=Organics Analyte=Pyrene ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.00010762	ND	.000858	mg/L	
1995	SW8270	L	.	.00033896	ND	.000894	mg/L	
1995	SW8270	L	.	.00003810	ND	.000903	mg/L	
1995	SW8270	L	.	.00052625	ND	.000871	mg/L	

N = 4

------------ Site=Southeast Runway Method=Organics Analyte=Styrene ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8260	L	.	.00013927	ND	.000552	mg/L	
1995	SW8260	L	.	.00006116	ND	.000184	mg/L	
1995	SW8260	L	.	.00011452	ND	.000184	mg/L	
1995	SW8260	L	.	.00008603	ND	.000184	mg/L	

N = 4

------- Site=Southeast Runway Method=Organics Analyte=Tetrachloroethene -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8260	L	.0017400	.0017400	DET	.00126	mg/L	B
1995	SW8260	L	.0000346	.0000346	DET	.00042	mg/L	BJ
1995	SW8260	L	.	.0000070	ND	.00042	mg/L	

a. Random uniform numbers, between zero and the lesser of the minimum result a

------- Site=Southeast Runway Method=Organics Analyte=Tetrachloroethene -------
(continued)

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8260	L	.0000289	.0000289	DET	.00042	mg/L	BJ

N = 4

------------ Site=Southeast Runway Method=Organics Analyte=Toluene ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8260	L	.006000	.006000	DET	.000489	mg/L	
1995	SW8260	L	.000195	.000195	DET	.000163	mg/L	
1995	SW8260	L	.000202	.000202	DET	.000163	mg/L	
1995	SW8260	L	.000256	.000256	DET	.000163	mg/L	

N = 4

-- Site=Southeast Runway Method=Organics Analyte=Tribromomethane(Bromoform) ---

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8260	L	.	.00005772	ND	.000408	mg/L	
1995	SW8260	L	.	.00004657	ND	.000136	mg/L	
1995	SW8260	L	.	.00013047	ND	.000136	mg/L	
1995	SW8260	L	.	.00005291	ND	.000136	mg/L	

N = 4

-------- Site=Southeast Runway Method=Organics Analyte=Trichloroethene --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8260	L	.0002060	.00020600	DET	.000591	mg/L	J
1995	SW8260	L	.0000348	.00003480	DET	.000197	mg/L	J
1995	SW8260	L	.	.00000145	ND	.000197	mg/L	
1995	SW8260	L	.0000208	.00002080	DET	.000197	mg/L	J

N = 4

a. Random uniform numbers, between zero and the lesser of the minimum result a

---- Site=Southeast Runway Method=Organics Analyte=Trichlorofluoromethane -----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8260	L	.	.00029098	ND	.0003000	mg/L	
1995	SW8260	L	.	.00005959	ND	.0000999	mg/L	
1995	SW8260	L	.	.00003174	ND	.0000999	mg/L	
1995	SW8260	L	.	.00000596	ND	.0000999	mg/L	

N = 4

--------- Site=Southeast Runway Method=Organics Analyte=Vinyl acetate ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8260	L	.	.00025196	ND	.001140	mg/L	
1995	SW8260	L	.	.00034133	ND	.000381	mg/L	
1995	SW8260	L	.	.00009647	ND	.000381	mg/L	
1995	SW8260	L	.	.00036579	ND	.000381	mg/L	

N = 4

-------- Site=Southeast Runway Method=Organics Analyte=Vinyl chloride ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8260	L	.	.00016332	ND	.0002090	mg/L	
1995	SW8260	L	.	.00001537	ND	.0000697	mg/L	
1995	SW8260	L	.	.00005307	ND	.0000697	mg/L	
1995	SW8260	L	.	.00003313	ND	.0000697	mg/L	

N = 4

-- Site=Southeast Runway Method=Organics Analyte=bis(2-Chloroethoxy)methane ---

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.00027879	ND	.000967	mg/L	
1995	SW8270	L	.	.00099703	ND	.001010	mg/L	
1995	SW8270	L	.	.00027473	ND	.001020	mg/L	

a. Random uniform numbers, between zero and the lesser of the minimum result a

-- Site=Southeast Runway Method=Organics Analyte=bis(2-Chloroethoxy)methane ---
(continued)

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.000080458	ND	.000982	mg/L	

N = 4

---- Site=Southeast Runway Method=Organics Analyte=bis(2-Chloroethyl)ether ----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.00079373	ND	.000857	mg/L	
1995	SW8270	L	.	.00060075	ND	.000893	mg/L	
1995	SW8270	L	.	.00063075	ND	.000902	mg/L	
1995	SW8270	L	.	.00077061	ND	.000870	mg/L	

N = 4

-- Site=Southeast Runway Method=Organics Analyte=bis(2-Chloroisopropyl)ether --

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.00012748	ND	.000891	mg/L	
1995	SW8270	L	.	.00030369	ND	.000928	mg/L	
1995	SW8270	L	.	.00020988	ND	.000938	mg/L	
1995	SW8270	L	.	.00024966	ND	.000905	mg/L	

N = 4

-- Site=Southeast Runway Method=Organics Analyte=bis(2-Ethylhexyl)phthalate ---

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	L	.	.00059027	ND	.000731	mg/L	
1995	SW8270	L	.	.00000476	ND	.000761	mg/L	
1995	SW8270	L	.	.00004567	ND	.000769	mg/L	
1995	SW8270	L	.	.00048959	ND	.000742	mg/L	

N = 4

a. Random uniform numbers, between zero and the lesser of the minimum result a

---- Site=Southeast Runway Method=Organics Analyte=cis-1,2-Dichloroethene -----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8260	L	.	.000068329	ND	.000312	mg/L	
1995	SW8260	L	.	.000063485	ND	.000104	mg/L	
1995	SW8260	L	.	.000059432	ND	.000104	mg/L	
1995	SW8260	L	.	.000058055	ND	.000104	mg/L	

N = 4

---- Site=Southeast Runway Method=Organics Analyte=cis-1,3-Dichloropropene ----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8260	L	.	.00015263	ND	.000348	mg/L	
1995	SW8260	L	.	.00009646	ND	.000116	mg/L	
1995	SW8260	L	.	.00007852	ND	.000116	mg/L	
1995	SW8260	L	.	.00003798	ND	.000116	mg/L	

N = 4

---------- Site=Southeast Runway Method=Organics Analyte=m&p-Xylenes ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8260	L	0.028400	0.028400	DET	.001660	mg/L	
1995	SW8260	L	.	0.000040	ND	.000554	mg/L	
1995	SW8260	L	.	0.000029	ND	.000554	mg/L	
1995	SW8260	L	0.000172	0.000172	DET	.000554	mg/L	J

N = 4

----------- Site=Southeast Runway Method=Organics Analyte=o-Xylene -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8260	L	0.0108	0.010800	DET	.000621	mg/L	
1995	SW8260	L	.	0.000112	ND	.000207	mg/L	
1995	SW8260	L	.	0.000171	ND	.000207	mg/L	

a. Random uniform numbers, between zero and the lesser of the minimum result a

----------- Site=Southeast Runway Method=Organics Analyte=o-Xylene -----------
(continued)

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8260	L	.	.00011426	ND	.000207	mg/L	

N = 4

--- Site=Southeast Runway Method=Organics Analyte=trans-1,2-Dichloroethene ----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8260	L	.	.00001690	ND	.000636	mg/L	
1995	SW8260	L	.	.00017652	ND	.000212	mg/L	
1995	SW8260	L	.	.00015262	ND	.000212	mg/L	
1995	SW8260	L	.	.00012740	ND	.000212	mg/L	

N = 4

--- Site=Southeast Runway Method=Organics Analyte=trans-1,3-Dichloropropene ---

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8260	L	.	.000019107	ND	.0002170	mg/L	
1995	SW8260	L	.	.000056558	ND	.0000724	mg/L	
1995	SW8260	L	.	.000068355	ND	.0000724	mg/L	
1995	SW8260	L	.	.000020900	ND	.0000724	mg/L	

N = 4

a. Random uniform numbers, between zero and the lesser of the minimum result a

Surface Soil Raw Data

------------ Site=Control Tower Method=Inorganics Analyte=Aluminum ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW6010	S	6960	6960	DET	2.46	mg/kg	
1995	SW6010	S	6090	6090	DET	2.53	mg/kg	
1995	SW6010	S	11800	11800	DET	2.61	mg/kg	
1995	SW6010	S	5840	5840	DET	2.27	mg/kg	
1995	SW6010	S	5510	5510	DET	2.46	mg/kg	
1995	SW6010	S	9290	9290	DET	2.83	mg/kg	

N = 6

------------ Site=Control Tower Method=Inorganics Analyte=Antimony ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW6010	S	31.0	31.0	DET	5.22	mg/kg	
1995	SW6010	S	12.9	12.9	DET	5.38	mg/kg	
1995	SW6010	S	30.5	30.5	DET	5.55	mg/kg	
1995	SW6010	S	25.4	25.4	DET	4.82	mg/kg	
1995	SW6010	S	27.2	27.2	DET	5.22	mg/kg	
1995	SW6010	S	49.2	49.2	DET	6.02	mg/kg	

N = 6

------------ Site=Control Tower Method=Inorganics Analyte=Arsenic ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW7060	S	3.37	3.37	DET	0.164	mg/kg	
1995	SW7060	S	4.05	4.05	DET	0.183	mg/kg	
1995	SW7060	S	11.70	11.70	DET	0.391	mg/kg	
1995	SW7060	S	5.77	5.77	DET	0.193	mg/kg	
1995	SW7060	S	4.89	4.89	DET	0.165	mg/kg	
1995	SW7060	S	10.30	10.30	DET	0.196	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

------------ Site=Control Tower Method=Inorganics Analyte=Barium ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW6010	S	84.8	84.8	DET	0.0620	mg/kg	
1995	SW6010	S	74.9	74.9	DET	0.0640	mg/kg	
1995	SW6010	S	192.0	192.0	DET	0.0660	mg/kg	
1995	SW6010	S	95.7	95.7	DET	0.0573	mg/kg	
1995	SW6010	S	100.0	100.0	DET	0.0620	mg/kg	
1995	SW6010	S	150.0	150.0	DET	0.0716	mg/kg	

N = 6

------------ Site=Control Tower Method=Inorganics Analyte=Beryllium ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW6010	S	0.0401	0.0401	DET	0.0293	mg/kg	B
1995	SW6010	S	0.0294	0.0294	DET	0.0302	mg/kg	BJ
1995	SW6010	S	0.2310	0.2310	DET	0.0312	mg/kg	
1995	SW6010	S	0.1460	0.1460	DET	0.0270	mg/kg	B
1995	SW6010	S	0.0676	0.0676	DET	0.0293	mg/kg	B
1995	SW6010	S	0.3370	0.3370	DET	0.0338	mg/kg	

N = 6

------------ Site=Control Tower Method=Inorganics Analyte=Cadmium ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW6010	S	-0.717	-0.717	DET	0.332	mg/kg	J
1995	SW6010	S	-0.870	-0.870	DET	0.342	mg/kg	J
1995	SW6010	S	-1.180	-1.180	DET	0.353	mg/kg	J
1995	SW6010	S	-0.608	-0.608	DET	0.306	mg/kg	J
1995	SW6010	S	-0.217	-0.217	DET	0.332	mg/kg	J
1995	SW6010	S	-0.881	-0.881	DET	0.383	mg/kg	J

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

------------ Site=Control Tower Method=Inorganics Analyte=Calcium -------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW6010	S	3900	3900	DET	1.22	mg/kg	
1995	SW6010	S	3390	3390	DET	1.25	mg/kg	
1995	SW6010	S	15400	15400	DET	1.29	mg/kg	
1995	SW6010	S	5730	5730	DET	1.12	mg/kg	
1995	SW6010	S	5410	5410	DET	1.22	mg/kg	
1995	SW6010	S	7490	7490	DET	1.40	mg/kg	

N = 6

------------ Site=Control Tower Method=Inorganics Analyte=Chromium ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW6010	S	38.8	38.8	DET	0.175	mg/kg	
1995	SW6010	S	10.3	10.3	DET	0.181	mg/kg	
1995	SW6010	S	23.5	23.5	DET	0.186	mg/kg	
1995	SW6010	S	11.3	11.3	DET	0.162	mg/kg	
1995	SW6010	S	13.0	13.0	DET	0.175	mg/kg	
1995	SW6010	S	18.6	18.6	DET	0.202	mg/kg	

N = 6

------------ Site=Control Tower Method=Inorganics Analyte=Cobalt ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW6010	S	8.29	8.29	DET	0.479	mg/kg	
1995	SW6010	S	7.32	7.32	DET	0.494	mg/kg	
1995	SW6010	S	9.58	9.58	DET	0.510	mg/kg	
1995	SW6010	S	5.78	5.78	DET	0.442	mg/kg	
1995	SW6010	S	5.00	5.00	DET	0.479	mg/kg	
1995	SW6010	S	8.82	8.82	DET	0.553	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

------------- Site=Control Tower Method=Inorganics Analyte=Copper ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW6010	S	9.52	9.52	DET	0.447	mg/kg	
1995	SW6010	S	8.82	8.82	DET	0.461	mg/kg	
1995	SW6010	S	22.90	22.90	DET	0.475	mg/kg	
1995	SW6010	S	9.14	9.14	DET	0.413	mg/kg	
1995	SW6010	S	9.14	9.14	DET	0.447	mg/kg	
1995	SW6010	S	16.10	16.10	DET	0.516	mg/kg	

N = 6

------------- Site=Control Tower Method=Inorganics Analyte=Iron -------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW6010	S	12300	12300	DET	0.453	mg/kg	
1995	SW6010	S	12300	12300	DET	0.467	mg/kg	
1995	SW6010	S	21400	21400	DET	0.482	mg/kg	
1995	SW6010	S	11100	11100	DET	0.418	mg/kg	
1995	SW6010	S	10200	10200	DET	0.453	mg/kg	
1995	SW6010	S	17200	17200	DET	0.523	mg/kg	

N = 6

-------------- Site=Control Tower Method=Inorganics Analyte=Lead -------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW7421	S	18.00	18.00	DET	0.6320	mg/kg	
1995	SW7421	S	10.10	10.10	DET	0.2810	mg/kg	
1995	SW7421	S	7.97	7.97	DET	0.3010	mg/kg	
1995	SW7421	S	3.85	3.85	DET	0.0657	mg/kg	
1995	SW7421	S	76.60	76.60	DET	2.5400	mg/kg	
1995	SW7421	S	21.90	21.90	DET	0.7550	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

----------- Site=Control Tower Method=Inorganics Analyte=Magnesium ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW6010	S	4380	4380	DET	8.57	mg/kg	
1995	SW6010	S	3080	3080	DET	8.84	mg/kg	
1995	SW6010	S	7580	7580	DET	9.12	mg/kg	
1995	SW6010	S	3410	3410	DET	7.91	mg/kg	
1995	SW6010	S	3280	3280	DET	8.57	mg/kg	
1995	SW6010	S	5010	5010	DET	9.89	mg/kg	

N = 6

----------- Site=Control Tower Method=Inorganics Analyte=Manganese ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW6010	S	233	233	DET	0.438	mg/kg	
1995	SW6010	S	212	212	DET	0.452	mg/kg	
1995	SW6010	S	406	406	DET	0.466	mg/kg	
1995	SW6010	S	197	197	DET	0.405	mg/kg	
1995	SW6010	S	187	187	DET	0.438	mg/kg	
1995	SW6010	S	323	323	DET	0.506	mg/kg	

N = 6

----------- Site=Control Tower Method=Inorganics Analyte=Molybdenum -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW6010	S	0.328	0.328	DET	0.342	mg/kg	J
1995	SW6010	S	1.640	1.640	DET	0.352	mg/kg	
1995	SW6010	S	1.140	1.140	DET	0.363	mg/kg	
1995	SW6010	S	0.265	0.265	DET	0.315	mg/kg	J
1995	SW6010	S	1.450	1.450	DET	0.342	mg/kg	
1995	SW6010	S	1.380	1.380	DET	0.394	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

------------- Site=Control Tower Method=Inorganics Analyte=Nickel -------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW6010	S	27.8	27.8	DET	1.020	mg/kg	
1995	SW6010	S	18.1	18.1	DET	1.050	mg/kg	
1995	SW6010	S	25.7	25.7	DET	1.080	mg/kg	
1995	SW6010	S	15.4	15.4	DET	0.937	mg/kg	
1995	SW6010	S	12.8	12.8	DET	1.010	mg/kg	
1995	SW6010	S	17.1	17.1	DET	1.170	mg/kg	

N = 6

----------- Site=Control Tower Method=Inorganics Analyte=Potassium ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW6010	S	515	515	DET	39.2	mg/kg	
1995	SW6010	S	483	483	DET	40.5	mg/kg	
1995	SW6010	S	1270	1270	DET	41.7	mg/kg	
1995	SW6010	S	540	540	DET	36.2	mg/kg	
1995	SW6010	S	585	585	DET	39.2	mg/kg	
1995	SW6010	S	922	922	DET	45.3	mg/kg	

N = 6

------------ Site=Control Tower Method=Inorganics Analyte=Selenium ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW7740	S	0.1720	0.1720	DET	0.109	mg/kg	
1995	SW7740	S	0.0712	0.0712	DET	0.121	mg/kg	J
1995	SW7740	S	0.5930	0.5930	DET	0.130	mg/kg	
1995	SW7740	S	0.2830	0.2830	DET	0.113	mg/kg	
1995	SW7740	S	0.1710	0.1710	DET	0.110	mg/kg	
1995	SW7740	S	0.4040	0.4040	DET	0.130	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

------------- Site=Control Tower Method=Inorganics Analyte=Silver -------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW6010	S	-0.695	-0.695	DET	0.394	mg/kg	J
1995	SW6010	S	-0.703	-0.703	DET	0.407	mg/kg	J
1995	SW6010	S	-1.480	-1.480	DET	0.419	mg/kg	J
1995	SW6010	S	-0.669	-0.669	DET	0.364	mg/kg	J
1995	SW6010	S	-0.750	-0.750	DET	0.394	mg/kg	J
1995	SW6010	S	-1.330	-1.330	DET	0.455	mg/kg	J

N = 6

------------- Site=Control Tower Method=Inorganics Analyte=Sodium -------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW6010	S	158	158	DET	2.71	mg/kg	
1995	SW6010	S	136	136	DET	2.80	mg/kg	
1995	SW6010	S	427	427	DET	2.89	mg/kg	
1995	SW6010	S	138	138	DET	2.50	mg/kg	
1995	SW6010	S	167	167	DET	2.71	mg/kg	
1995	SW6010	S	301	301	DET	3.13	mg/kg	

N = 6

------------ Site=Control Tower Method=Inorganics Analyte=Thallium ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW6010	S	19.10	19.10	DET	5.48	mg/kg	
1995	SW6010	S	-1.18	-1.18	DET	5.65	mg/kg	J
1995	SW6010	S	29.40	29.40	DET	5.83	mg/kg	
1995	SW6010	S	5.95	5.95	DET	5.06	mg/kg	
1995	SW6010	S	28.90	28.90	DET	5.48	mg/kg	
1995	SW6010	S	7.95	7.95	DET	6.32	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

------------ Site=Control Tower Method=Inorganics Analyte=Vanadium ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW6010	S	26.6	26.6	DET	0.260	mg/kg	
1995	SW6010	S	24.5	24.5	DET	0.269	mg/kg	
1995	SW6010	S	44.6	44.6	DET	0.277	mg/kg	
1995	SW6010	S	25.4	25.4	DET	0.240	mg/kg	
1995	SW6010	S	22.4	22.4	DET	0.260	mg/kg	
1995	SW6010	S	35.4	35.4	DET	0.300	mg/kg	

N = 6

------------- Site=Control Tower Method=Inorganics Analyte=Zinc -------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW6010	S	27.9	27.9	DET	0.309	mg/kg	
1995	SW6010	S	28.9	28.9	DET	0.318	mg/kg	
1995	SW6010	S	57.5	57.5	DET	0.328	mg/kg	
1995	SW6010	S	25.8	25.8	DET	0.285	mg/kg	
1995	SW6010	S	46.7	46.7	DET	0.309	mg/kg	
1995	SW6010	S	53.2	53.2	DET	0.356	mg/kg	

N = 6

------ Site=Control Tower Method=Organics Analyte=1,1,1-Trichloroethane -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00043924	ND	.000792	mg/kg	
1995	SW8240	S	.	.00042274	ND	.000781	mg/kg	
1995	SW8240	S	.	.00032573	ND	.000857	mg/kg	
1995	SW8240	S	.	.00036516	ND	.000783	mg/kg	
1995	SW8240	S	.	.00056647	ND	.000795	mg/kg	
1995	SW8240	S	.	.00021575	ND	.000887	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

---- Site=Control Tower Method=Organics Analyte=1,1,2,2-Tetrachloroethane -----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.0007945	ND	.00113	mg/kg	
1995	SW8240	S	.	.0006045	ND	.00111	mg/kg	
1995	SW8240	S	.	.0010268	ND	.00122	mg/kg	
1995	SW8240	S	.	.0009371	ND	.00111	mg/kg	
1995	SW8240	S	.	.0001852	ND	.00113	mg/kg	X
1995	SW8240	S	.	.0003307	ND	.00126	mg/kg	

N = 6

------ Site=Control Tower Method=Organics Analyte=1,1,2-Trichloroethane -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00059363	ND	.000817	mg/kg	
1995	SW8240	S	.	.00015844	ND	.000805	mg/kg	
1995	SW8240	S	.	.00073073	ND	.000884	mg/kg	
1995	SW8240	S	.	.00019938	ND	.000807	mg/kg	
1995	SW8240	S	.	.00047723	ND	.000820	mg/kg	X
1995	SW8240	S	.	.00072312	ND	.000915	mg/kg	

N = 6

-------- Site=Control Tower Method=Organics Analyte=1,1-Dichloroethane --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.0010367	ND	.00108	mg/kg	
1995	SW8240	S	.	.0008969	ND	.00106	mg/kg	
1995	SW8240	S	.	.0000780	ND	.00117	mg/kg	
1995	SW8240	S	.	.0000098	ND	.00106	mg/kg	
1995	SW8240	S	.	.0001828	ND	.00108	mg/kg	
1995	SW8240	S	.	.0012069	ND	.00121	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

-------- Site=Control Tower Method=Organics Analyte=1,1-Dichloroethene --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00042759	ND	.000754	mg/kg	
1995	SW8240	S	.	.00025946	ND	.000743	mg/kg	
1995	SW8240	S	.	.00007911	ND	.000816	mg/kg	
1995	SW8240	S	.	.00070691	ND	.000745	mg/kg	
1995	SW8240	S	.	.00072810	ND	.000757	mg/kg	
1995	SW8240	S	.	.00004400	ND	.000844	mg/kg	

N = 6

------ Site=Control Tower Method=Organics Analyte=1,2,4-Trichlorobenzene ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.008121	ND	0.0146	mg/kg	
1995	SW8270	S	.	0.011563	ND	0.0142	mg/kg	
1995	SW8270	S	.	0.004262	ND	0.0158	mg/kg	
1995	SW8270	S	.	0.012879	ND	0.0143	mg/kg	
1995	SW8270	S	.	0.009690	ND	0.0145	mg/kg	
1995	SW8270	S	.	0.002341	ND	0.0163	mg/kg	

N = 6

------- Site=Control Tower Method=Organics Analyte=1,2-Dichlorobenzene --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.012202	ND	0.0151	mg/kg	
1995	SW8270	S	.	0.013786	ND	0.0147	mg/kg	
1995	SW8270	S	.	0.004574	ND	0.0164	mg/kg	
1995	SW8270	S	.	0.006753	ND	0.0149	mg/kg	
1995	SW8270	S	.	0.009570	ND	0.0150	mg/kg	
1995	SW8270	S	.	0.010257	ND	0.0169	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

-------- Site=Control Tower Method=Organics Analyte=1,2-Dichloroethane --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00035900	ND	.000779	mg/kg	
1995	SW8240	S	.	.00022253	ND	.000767	mg/kg	
1995	SW8240	S	.	.00070531	ND	.000843	mg/kg	
1995	SW8240	S	.	.00073776	ND	.000769	mg/kg	
1995	SW8240	S	.	.00038086	ND	.000782	mg/kg	
1995	SW8240	S	.	.00070820	ND	.000872	mg/kg	

N = 6

------- Site=Control Tower Method=Organics Analyte=1,2-Dichloropropane --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00026725	ND	.000608	mg/kg	
1995	SW8240	S	.	.00035630	ND	.000599	mg/kg	
1995	SW8240	S	.	.00046403	ND	.000658	mg/kg	
1995	SW8240	S	.	.00057383	ND	.000600	mg/kg	
1995	SW8240	S	.	.00025476	ND	.000610	mg/kg	
1995	SW8240	S	.	.00048496	ND	.000681	mg/kg	

N = 6

------- Site=Control Tower Method=Organics Analyte=1,3-Dichlorobenzene --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.014863	ND	0.0151	mg/kg	
1995	SW8270	S	.	0.013448	ND	0.0147	mg/kg	
1995	SW8270	S	.	0.003817	ND	0.0163	mg/kg	
1995	SW8270	S	.	0.012129	ND	0.0148	mg/kg	
1995	SW8270	S	.	0.004643	ND	0.0150	mg/kg	
1995	SW8270	S	.	0.001602	ND	0.0168	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

------- Site=Control Tower Method=Organics Analyte=1,4-Dichlorobenzene --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.017970	ND	0.0214	mg/kg	
1995	SW8270	S	.	0.001922	ND	0.0209	mg/kg	
1995	SW8270	S	.	0.013286	ND	0.0232	mg/kg	
1995	SW8270	S	.	0.006821	ND	0.0211	mg/kg	
1995	SW8270	S	.	0.000034	ND	0.0213	mg/kg	
1995	SW8270	S	.	0.004343	ND	0.0239	mg/kg	

N = 6

------ Site=Control Tower Method=Organics Analyte=2,4,5-Trichlorophenol -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.004644	ND	0.0106	mg/kg	
1995	SW8270	S	.	0.009570	ND	0.0104	mg/kg	
1995	SW8270	S	.	0.002357	ND	0.0115	mg/kg	
1995	SW8270	S	.	0.005794	ND	0.0105	mg/kg	
1995	SW8270	S	.	0.010153	ND	0.0106	mg/kg	
1995	SW8270	S	.	0.001857	ND	0.0119	mg/kg	

N = 6

------ Site=Control Tower Method=Organics Analyte=2,4,6-Trichlorophenol -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.020341	ND	0.0237	mg/kg	
1995	SW8270	S	.	0.001837	ND	0.0231	mg/kg	
1995	SW8270	S	.	0.011526	ND	0.0256	mg/kg	
1995	SW8270	S	.	0.002337	ND	0.0233	mg/kg	
1995	SW8270	S	.	0.012226	ND	0.0235	mg/kg	
1995	SW8270	S	.	0.024233	ND	0.0264	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

-------- Site=Control Tower Method=Organics Analyte=2,4-Dichlorophenol --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	.0062851	ND	.00826	mg/kg	
1995	SW8270	S	.	.0015872	ND	.00805	mg/kg	
1995	SW8270	S	.	.0047265	ND	.00894	mg/kg	
1995	SW8270	S	.	.0073529	ND	.00813	mg/kg	
1995	SW8270	S	.	.0008949	ND	.00820	mg/kg	
1995	SW8270	S	.	.0050052	ND	.00922	mg/kg	

N = 6

-------- Site=Control Tower Method=Organics Analyte=2,4-Dimethylphenol --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.014738	ND	0.0227	mg/kg	
1995	SW8270	S	.	0.011989	ND	0.0221	mg/kg	
1995	SW8270	S	.	0.014115	ND	0.0245	mg/kg	
1995	SW8270	S	.	0.008258	ND	0.0223	mg/kg	
1995	SW8270	S	.	0.010260	ND	0.0225	mg/kg	
1995	SW8270	S	.	0.022886	ND	0.0253	mg/kg	

N = 6

-------- Site=Control Tower Method=Organics Analyte=2,4-Dinitrophenol ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.027387	ND	0.0439	mg/kg	
1995	SW8270	S	.	0.026173	ND	0.0428	mg/kg	
1995	SW8270	S	.	0.034914	ND	0.0475	mg/kg	
1995	SW8270	S	.	0.011049	ND	0.0432	mg/kg	
1995	SW8270	S	.	0.024865	ND	0.0436	mg/kg	
1995	SW8270	S	.	0.016615	ND	0.0490	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

-------- Site=Control Tower Method=Organics Analyte=2,4-Dinitrotoluene --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.010699	ND	0.0134	mg/kg	
1995	SW8270	S	.	0.008031	ND	0.0130	mg/kg	
1995	SW8270	S	.	0.010231	ND	0.0145	mg/kg	
1995	SW8270	S	.	0.001445	ND	0.0132	mg/kg	
1995	SW8270	S	.	0.011482	ND	0.0133	mg/kg	
1995	SW8270	S	.	0.005385	ND	0.0149	mg/kg	

N = 6

-------- Site=Control Tower Method=Organics Analyte=2,6-Dinitrotoluene --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.018944	ND	0.0289	mg/kg	
1995	SW8270	S	.	0.025908	ND	0.0282	mg/kg	
1995	SW8270	S	.	0.013369	ND	0.0313	mg/kg	
1995	SW8270	S	.	0.026936	ND	0.0285	mg/kg	
1995	SW8270	S	.	0.024705	ND	0.0287	mg/kg	
1995	SW8270	S	.	0.010846	ND	0.0323	mg/kg	

N = 6

--------- Site=Control Tower Method=Organics Analyte=2-Butanone(MEK) ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.0008738	ND	.00378	mg/kg	
1995	SW8240	S	.	.0031107	ND	.00372	mg/kg	
1995	SW8240	S	.	.0040677	ND	.00409	mg/kg	
1995	SW8240	S	.	.0032157	ND	.00373	mg/kg	
1995	SW8240	S	.	.0022350	ND	.00379	mg/kg	
1995	SW8240	S	.	.0006688	ND	.00423	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

---- Site=Control Tower Method=Organics Analyte=2-Chloroethyl vinyl ether -----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00079636	ND	.000872	mg/kg	
1995	SW8240	S	.	.00068094	ND	.000859	mg/kg	
1995	SW8240	S	.	.00034276	ND	.000944	mg/kg	
1995	SW8240	S	.	.00047495	ND	.000861	mg/kg	
1995	SW8240	S	.	.00046126	ND	.000875	mg/kg	
1995	SW8240	S	.	.00091219	ND	.000976	mg/kg	

N = 6

------- Site=Control Tower Method=Organics Analyte=2-Chloronaphthalene --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.003443	ND	0.0178	mg/kg	
1995	SW8270	S	.	0.017263	ND	0.0173	mg/kg	
1995	SW8270	S	.	0.003892	ND	0.0192	mg/kg	
1995	SW8270	S	.	0.015143	ND	0.0175	mg/kg	
1995	SW8270	S	.	0.016952	ND	0.0176	mg/kg	
1995	SW8270	S	.	0.006925	ND	0.0199	mg/kg	

N = 6

---------- Site=Control Tower Method=Organics Analyte=2-Chlorophenol ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.005505	ND	0.0156	mg/kg	
1995	SW8270	S	.	0.009563	ND	0.0153	mg/kg	
1995	SW8270	S	.	0.005787	ND	0.0169	mg/kg	
1995	SW8270	S	.	0.007608	ND	0.0154	mg/kg	
1995	SW8270	S	.	0.010797	ND	0.0155	mg/kg	
1995	SW8270	S	.	0.017353	ND	0.0175	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

------------ Site=Control Tower Method=Organics Analyte=2-Hexanone ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.0017760	ND	.00259	mg/kg	
1995	SW8240	S	.	.0004631	ND	.00255	mg/kg	
1995	SW8240	S	.	.0001093	ND	.00280	mg/kg	
1995	SW8240	S	.	.0021411	ND	.00256	mg/kg	
1995	SW8240	S	.	.0016534	ND	.00260	mg/kg	X
1995	SW8240	S	.	.0023454	ND	.00290	mg/kg	

N = 6

------- Site=Control Tower Method=Organics Analyte=2-Methylnaphthalene --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.010415	ND	0.0230	mg/kg	
1995	SW8270	S	.	0.021304	ND	0.0224	mg/kg	
1995	SW8270	S	0.0231	0.023100	DET	0.0249	mg/kg	J
1995	SW8270	S	.	0.003230	ND	0.0226	mg/kg	
1995	SW8270	S	0.0217	0.021700	DET	0.0228	mg/kg	J
1995	SW8270	S	.	0.019351	ND	0.0257	mg/kg	

N = 6

----- Site=Control Tower Method=Organics Analyte=2-Methylphenol(o-cresol) -----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	.0096075	ND	0.0103	mg/kg	
1995	SW8270	S	.	.0022983	ND	0.0101	mg/kg	
1995	SW8270	S	.	.0030126	ND	0.0112	mg/kg	
1995	SW8270	S	.	.0068486	ND	0.0102	mg/kg	
1995	SW8270	S	.	.0030195	ND	0.0102	mg/kg	
1995	SW8270	S	.	.0027381	ND	0.0115	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

---------- Site=Control Tower Method=Organics Analyte=2-Nitroaniline ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	.0032563	ND	.00603	mg/kg	
1995	SW8270	S	.	.0012367	ND	.00588	mg/kg	
1995	SW8270	S	.	.0026812	ND	.00652	mg/kg	
1995	SW8270	S	.	.0020409	ND	.00594	mg/kg	
1995	SW8270	S	.	.0002465	ND	.00599	mg/kg	
1995	SW8270	S	.	.0015001	ND	.00673	mg/kg	

N = 6

---------- Site=Control Tower Method=Organics Analyte=2-Nitrophenol -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.003731	ND	0.0172	mg/kg	
1995	SW8270	S	.	0.005074	ND	0.0167	mg/kg	
1995	SW8270	S	.	0.003833	ND	0.0186	mg/kg	
1995	SW8270	S	.	0.015539	ND	0.0169	mg/kg	
1995	SW8270	S	.	0.003679	ND	0.0171	mg/kg	
1995	SW8270	S	.	0.001850	ND	0.0192	mg/kg	

N = 6

------ Site=Control Tower Method=Organics Analyte=3,3'-Dichlorobenzidine ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.010274	ND	0.0105	mg/kg	
1995	SW8270	S	.	0.006748	ND	0.0102	mg/kg	
1995	SW8270	S	.	0.007028	ND	0.0114	mg/kg	
1995	SW8270	S	.	0.001582	ND	0.0103	mg/kg	
1995	SW8270	S	.	0.002122	ND	0.0104	mg/kg	
1995	SW8270	S	.	0.008338	ND	0.0117	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

---------- Site=Control Tower Method=Organics Analyte=3-Nitroaniline ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.000058	ND	0.0146	mg/kg	
1995	SW8270	S	.	0.011112	ND	0.0142	mg/kg	
1995	SW8270	S	.	0.001262	ND	0.0158	mg/kg	
1995	SW8270	S	.	0.002988	ND	0.0144	mg/kg	
1995	SW8270	S	.	0.009490	ND	0.0145	mg/kg	
1995	SW8270	S	.	0.010185	ND	0.0163	mg/kg	

N = 6

------------ Site=Control Tower Method=Organics Analyte=4,4'-DDD ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8080	S	0.01110	0.01110	DET	.001170	mg/kg	
1995	SW8080	S	0.00187	0.00187	DET	.000230	mg/kg	
1995	SW8080	S	0.00275	0.00275	DET	.000255	mg/kg	
1995	SW8080	S	0.00217	0.00217	DET	.002920	mg/kg	KJ
1995	SW8080	S	0.02980	0.02980	DET	.002330	mg/kg	P
1995	SW8080	S	0.03010	0.03010	DET	.001310	mg/kg	

N = 6

------------ Site=Control Tower Method=Organics Analyte=4,4'-DDE ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8080	S	.00938	.0093800	DET	.002420	mg/kg	
1995	SW8080	S	.00186	.0018600	DET	.000474	mg/kg	
1995	SW8080	S	.00365	.0036500	DET	.000525	mg/kg	
1995	SW8080	S	.	.0004504	ND	.000479	mg/kg	
1995	SW8080	S	.00878	.0087800	DET	.004800	mg/kg	
1995	SW8080	S	.00508	.0050800	DET	.002700	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

------------- Site=Control Tower Method=Organics Analyte=4,4'-DDT -------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8080	S	0.14900	0.14900	DET	.003890	mg/kg	
1995	SW8080	S	0.05300	0.05300	DET	.000763	mg/kg	
1995	SW8080	S	0.03030	0.03030	DET	.000844	mg/kg	
1995	SW8080	S	0.00159	0.00159	DET	.000771	mg/kg	
1995	SW8080	S	0.49600	0.49600	DET	.007720	mg/kg	
1995	SW8080	S	0.01370	0.01370	DET	.004350	mg/kg	

N = 6

---- Site=Control Tower Method=Organics Analyte=4,6-Dinitro-2-methylphenol ----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.00170	ND	0.135	mg/kg	
1995	SW8270	S	.	0.03122	ND	0.131	mg/kg	
1995	SW8270	S	.	0.01532	ND	0.146	mg/kg	
1995	SW8270	S	.	0.09423	ND	0.133	mg/kg	
1995	SW8270	S	.	0.03711	ND	0.134	mg/kg	
1995	SW8270	S	.	0.11628	ND	0.151	mg/kg	

N = 6

---- Site=Control Tower Method=Organics Analyte=4-Bromophenyl phenyl ether ----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	.0041525	ND	0.0126	mg/kg	
1995	SW8270	S	.	.0005798	ND	0.0123	mg/kg	
1995	SW8270	S	.	.0087334	ND	0.0137	mg/kg	
1995	SW8270	S	.	.0015900	ND	0.0125	mg/kg	
1995	SW8270	S	.	.0060237	ND	0.0126	mg/kg	
1995	SW8270	S	.	.0096858	ND	0.0141	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

----- Site=Control Tower Method=Organics Analyte=4-Chloro-3-methylphenol ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	.0041838	ND	.00634	mg/kg	
1995	SW8270	S	.	.0051349	ND	.00618	mg/kg	
1995	SW8270	S	.	.0008571	ND	.00686	mg/kg	
1995	SW8270	S	.	.0047433	ND	.00625	mg/kg	
1995	SW8270	S	.	.0002415	ND	.00630	mg/kg	
1995	SW8270	S	.	.0014908	ND	.00708	mg/kg	

N = 6

--------- Site=Control Tower Method=Organics Analyte=4-Chloroaniline ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.004438	ND	0.0146	mg/kg	
1995	SW8270	S	.	0.009655	ND	0.0142	mg/kg	
1995	SW8270	S	.	0.003719	ND	0.0158	mg/kg	
1995	SW8270	S	.	0.010234	ND	0.0143	mg/kg	
1995	SW8270	S	.	0.001971	ND	0.0145	mg/kg	
1995	SW8270	S	.	0.005977	ND	0.0163	mg/kg	

N = 6

--- Site=Control Tower Method=Organics Analyte=4-Chlorophenyl phenyl ether ----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.005804	ND	0.0221	mg/kg	
1995	SW8270	S	.	0.015395	ND	0.0215	mg/kg	
1995	SW8270	S	.	0.020419	ND	0.0239	mg/kg	
1995	SW8270	S	.	0.017000	ND	0.0218	mg/kg	
1995	SW8270	S	.	0.000385	ND	0.0219	mg/kg	
1995	SW8270	S	.	0.024095	ND	0.0247	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

---- Site=Control Tower Method=Organics Analyte=4-Methyl-2-pentanone(MIBK) ----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.0010888	ND	.00230	mg/kg	
1995	SW8240	S	.	.0000822	ND	.00227	mg/kg	
1995	SW8240	S	.	.0016094	ND	.00249	mg/kg	
1995	SW8240	S	.	.0020554	ND	.00227	mg/kg	
1995	SW8240	S	.	.0004097	ND	.00231	mg/kg	
1995	SW8240	S	.	.0016762	ND	.00257	mg/kg	

N = 6

-- Site=Control Tower Method=Organics Analyte=4-Methylphenol/3-Methylphenol ---

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.003043	ND	0.0140	mg/kg	
1995	SW8270	S	.	0.003471	ND	0.0136	mg/kg	
1995	SW8270	S	.	0.003099	ND	0.0151	mg/kg	
1995	SW8270	S	.	0.000921	ND	0.0138	mg/kg	
1995	SW8270	S	.	0.010280	ND	0.0139	mg/kg	
1995	SW8270	S	.	0.005424	ND	0.0156	mg/kg	

N = 6

---------- Site=Control Tower Method=Organics Analyte=4-Nitroaniline ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.011279	ND	0.0144	mg/kg	
1995	SW8270	S	.	0.001959	ND	0.0140	mg/kg	
1995	SW8270	S	.	0.008624	ND	0.0155	mg/kg	
1995	SW8270	S	.	0.012108	ND	0.0141	mg/kg	
1995	SW8270	S	.	0.008548	ND	0.0143	mg/kg	
1995	SW8270	S	.	0.009465	ND	0.0160	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

---------- Site=Control Tower Method=Organics Analyte=4-Nitrophenol -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.008651	ND	0.0150	mg/kg	
1995	SW8270	S	.	0.008005	ND	0.0146	mg/kg	
1995	SW8270	S	.	0.012755	ND	0.0162	mg/kg	
1995	SW8270	S	.	0.001360	ND	0.0147	mg/kg	
1995	SW8270	S	.	0.000563	ND	0.0148	mg/kg	
1995	SW8270	S	.	0.011008	ND	0.0167	mg/kg	

N = 6

----------- Site=Control Tower Method=Organics Analyte=Acenaphthene -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.010509	ND	0.0151	mg/kg	
1995	SW8270	S	.	0.000654	ND	0.0147	mg/kg	
1995	SW8270	S	.	0.002355	ND	0.0163	mg/kg	
1995	SW8270	S	.	0.004020	ND	0.0149	mg/kg	
1995	SW8270	S	.	0.011198	ND	0.0150	mg/kg	
1995	SW8270	S	.	0.016062	ND	0.0169	mg/kg	

N = 6

---------- Site=Control Tower Method=Organics Analyte=Acenaphthylene ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.005899	ND	0.0135	mg/kg	
1995	SW8270	S	.	0.006732	ND	0.0132	mg/kg	
1995	SW8270	S	.	0.008677	ND	0.0146	mg/kg	
1995	SW8270	S	.	0.006252	ND	0.0133	mg/kg	
1995	SW8270	S	.	0.012638	ND	0.0134	mg/kg	
1995	SW8270	S	.	0.008645	ND	0.0151	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

------------- Site=Control Tower Method=Organics Analyte=Acetone --------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.0026971	ND	.00482	mg/kg	
1995	SW8240	S	.	.0033237	ND	.00475	mg/kg	
1995	SW8240	S	.	.0008002	ND	.00521	mg/kg	
1995	SW8240	S	.	.0044102	ND	.00476	mg/kg	
1995	SW8240	S	.	.0020176	ND	.00483	mg/kg	
1995	SW8240	S	.	.0018507	ND	.00539	mg/kg	

N = 6

-------------- Site=Control Tower Method=Organics Analyte=Aldrin --------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8080	S	.005270	.0052700	DET	.001520	mg/kg	
1995	SW8080	S	.000727	.0007270	DET	.000299	mg/kg	PB
1995	SW8080	S	.001120	.0011200	DET	.000330	mg/kg	B
1995	SW8080	S	.000660	.0006600	DET	.000302	mg/kg	PB
1995	SW8080	S	.	.0004490	ND	.003020	mg/kg	
1995	SW8080	S	.005870	.0058700	DET	.001700	mg/kg	

N = 6

------------ Site=Control Tower Method=Organics Analyte=Anthracene ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	0.0211	0.021100	DET	0.0182	mg/kg	
1995	SW8270	S	.	0.005277	ND	0.0177	mg/kg	
1995	SW8270	S	.	0.003922	ND	0.0197	mg/kg	
1995	SW8270	S	.	0.007654	ND	0.0179	mg/kg	
1995	SW8270	S	.	0.004996	ND	0.0181	mg/kg	
1995	SW8270	S	.	0.007953	ND	0.0203	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

------------- Site=Control Tower Method=Organics Analyte=Benzene -------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00079281	ND	.000865	mg/kg	
1995	SW8240	S	.	.00023091	ND	.000852	mg/kg	
1995	SW8240	S	.	.00065585	ND	.000936	mg/kg	
1995	SW8240	S	.	.00062072	ND	.000854	mg/kg	
1995	SW8240	S	.	.00065244	ND	.000868	mg/kg	
1995	SW8240	S	.	.00055685	ND	.000968	mg/kg	

N = 6

-------- Site=Control Tower Method=Organics Analyte=Benzo(a)anthracene --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	0.077	0.077000	DET	0.0200	mg/kg	
1995	SW8270	S	.	0.014458	ND	0.0195	mg/kg	
1995	SW8270	S	.	0.007870	ND	0.0216	mg/kg	
1995	SW8270	S	.	0.013464	ND	0.0197	mg/kg	
1995	SW8270	S	.	0.013157	ND	0.0198	mg/kg	
1995	SW8270	S	.	0.013719	ND	0.0223	mg/kg	

N = 6

---------- Site=Control Tower Method=Organics Analyte=Benzo(a)pyrene ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	0.0896	0.089600	DET	0.0209	mg/kg	
1995	SW8270	S	.	0.017398	ND	0.0204	mg/kg	
1995	SW8270	S	.	0.013650	ND	0.0227	mg/kg	
1995	SW8270	S	.	0.018313	ND	0.0206	mg/kg	
1995	SW8270	S	.	0.006637	ND	0.0208	mg/kg	X
1995	SW8270	S	.	0.017663	ND	0.0234	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

------- Site=Control Tower Method=Organics Analyte=Benzo(b)fluoranthene -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	0.15	0.15000	DET	0.0188	mg/kg	F
1995	SW8270	S	.	0.00313	ND	0.0183	mg/kg	
1995	SW8270	S	.	0.01178	ND	0.0203	mg/kg	
1995	SW8270	S	.	0.00752	ND	0.0185	mg/kg	
1995	SW8270	S	.	0.01520	ND	0.0187	mg/kg	X
1995	SW8270	S	.	0.01048	ND	0.0210	mg/kg	

N = 6

------- Site=Control Tower Method=Organics Analyte=Benzo(g,h,i)perylene -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	0.0777	0.077700	DET	0.0259	mg/kg	
1995	SW8270	S	.	0.010338	ND	0.0253	mg/kg	
1995	SW8270	S	.	0.024536	ND	0.0281	mg/kg	
1995	SW8270	S	.	0.006108	ND	0.0255	mg/kg	
1995	SW8270	S	.	0.012334	ND	0.0257	mg/kg	X
1995	SW8270	S	.	0.022474	ND	0.0290	mg/kg	

N = 6

------- Site=Control Tower Method=Organics Analyte=Benzo(k)fluoranthene -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	0.15	0.15000	DET	0.0328	mg/kg	F
1995	SW8270	S	.	0.00997	ND	0.0319	mg/kg	
1995	SW8270	S	.	0.01127	ND	0.0355	mg/kg	
1995	SW8270	S	.	0.00685	ND	0.0323	mg/kg	
1995	SW8270	S	.	0.02095	ND	0.0325	mg/kg	X
1995	SW8270	S	.	0.03579	ND	0.0366	mg/kg	

N = 6

a. Random uniform-numbers, between zero and the lesser of the minimum result a

----------- Site=Control Tower Method=Organics Analyte=Benzoic acid -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.13539	ND	0.210	mg/kg	
1995	SW8270	S	.	0.11963	ND	0.205	mg/kg	
1995	SW8270	S	.	0.17428	ND	0.227	mg/kg	
1995	SW8270	S	.	0.03011	ND	0.207	mg/kg	
1995	SW8270	S	.	0.17944	ND	0.209	mg/kg	
1995	SW8270	S	.	0.01907	ND	0.235	mg/kg	

N = 6

---------- Site=Control Tower Method=Organics Analyte=Benzyl alcohol ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.031888	ND	0.0387	mg/kg	
1995	SW8270	S	.	0.001245	ND	0.0377	mg/kg	
1995	SW8270	S	.	0.018287	ND	0.0419	mg/kg	
1995	SW8270	S	.	0.002712	ND	0.0381	mg/kg	
1995	SW8270	S	.	0.020513	ND	0.0384	mg/kg	
1995	SW8270	S	.	0.013474	ND	0.0432	mg/kg	

N = 6

------- Site=Control Tower Method=Organics Analyte=Bromodichloromethane -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00008090	ND	.000780	mg/kg	
1995	SW8240	S	.	.00015013	ND	.000768	mg/kg	
1995	SW8240	S	.	.00003439	ND	.000844	mg/kg	
1995	SW8240	S	.	.00019865	ND	.000770	mg/kg	
1995	SW8240	S	.	.00060629	ND	.000783	mg/kg	
1995	SW8240	S	.	.00027035	ND	.000873	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

----------- Site=Control Tower Method=Organics Analyte=Bromomethane -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00005027	ND	.00107	mg/kg	
1995	SW8240	S	.	.00050580	ND	.00105	mg/kg	
1995	SW8240	S	.	.00020510	ND	.00115	mg/kg	
1995	SW8240	S	.	.00031115	ND	.00105	mg/kg	
1995	SW8240	S	.	.00047884	ND	.00107	mg/kg	
1995	SW8240	S	.	.00008767	ND	.00119	mg/kg	

N = 6

------ Site=Control Tower Method=Organics Analyte=Butylbenzylphthalate -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.015922	ND	0.0221	mg/kg	
1995	SW8270	S	.	0.008928	ND	0.0215	mg/kg	
1995	SW8270	S	.	0.014681	ND	0.0239	mg/kg	
1995	SW8270	S	.	0.020505	ND	0.0217	mg/kg	
1995	SW8270	S	.	0.013655	ND	0.0219	mg/kg	
1995	SW8270	S	.	0.022524	ND	0.0246	mg/kg	

N = 6

-------- Site=Control Tower Method=Organics Analyte=Carbon disulfide ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00068141	ND	.000752	mg/kg	
1995	SW8240	S	.	.00014307	ND	.000741	mg/kg	
1995	SW8240	S	.	.00073575	ND	.000814	mg/kg	
1995	SW8240	S	.	.00016822	ND	.000743	mg/kg	
1995	SW8240	S	.	.00004040	ND	.000755	mg/kg	
1995	SW8240	S	.	.00081890	ND	.000842	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

------- Site=Control Tower Method=Organics Analyte=Carbon tetrachloride -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00051246	ND	.000850	mg/kg	
1995	SW8240	S	.	.00040589	ND	.000838	mg/kg	
1995	SW8240	S	.	.00009290	ND	.000920	mg/kg	
1995	SW8240	S	.	.00057023	ND	.000840	mg/kg	
1995	SW8240	S	.	.00018086	ND	.000853	mg/kg	
1995	SW8240	S	.	.00040261	ND	.000952	mg/kg	

N = 6

------------ Site=Control Tower Method=Organics Analyte=Chlordane ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8080	S	.	.0087838	ND	0.01250	mg/kg	
1995	SW8080	S	.	.0000269	ND	0.00245	mg/kg	
1995	SW8080	S	.	.0003399	ND	0.00271	mg/kg	
1995	SW8080	S	.	.0009403	ND	0.00248	mg/kg	
1995	SW8080	S	.	.0010465	ND	0.02480	mg/kg	
1995	SW8080	S	.	.0084587	ND	0.01400	mg/kg	

N = 6

---------- Site=Control Tower Method=Organics Analyte=Chlorobenzene -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00062566	ND	.000773	mg/kg	
1995	SW8240	S	.	.00007018	ND	.000761	mg/kg	
1995	SW8240	S	.	.00034853	ND	.000836	mg/kg	
1995	SW8240	S	.	.00064164	ND	.000763	mg/kg	
1995	SW8240	S	.	.00009120	ND	.000775	mg/kg	X
1995	SW8240	S	.	.00047616	ND	.000865	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

----------- Site=Control Tower Method=Organics Analyte=Chloroethane -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00008228	ND	.00108	mg/kg	
1995	SW8240	S	.	.00003830	ND	.00106	mg/kg	
1995	SW8240	S	.	.00083829	ND	.00117	mg/kg	
1995	SW8240	S	.	.00082376	ND	.00106	mg/kg	
1995	SW8240	S	.	.00040735	ND	.00108	mg/kg	
1995	SW8240	S	.	.00008266	ND	.00121	mg/kg	

N = 6

------------ Site=Control Tower Method=Organics Analyte=Chloroform ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00003673	ND	.00105	mg/kg	
1995	SW8240	S	.	.00019374	ND	.00103	mg/kg	
1995	SW8240	S	.	.00091639	ND	.00113	mg/kg	
1995	SW8240	S	.	.00026071	ND	.00103	mg/kg	
1995	SW8240	S	.	.00055291	ND	.00105	mg/kg	
1995	SW8240	S	.	.00039653	ND	.00117	mg/kg	

N = 6

---------- Site=Control Tower Method=Organics Analyte=Chloromethane -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00078253	ND	.000942	mg/kg	
1995	SW8240	S	.	.00041511	ND	.000928	mg/kg	
1995	SW8240	S	.	.00051651	ND	.001020	mg/kg	
1995	SW8240	S	.	.00073261	ND	.000930	mg/kg	
1995	SW8240	S	.	.00062216	ND	.000945	mg/kg	
1995	SW8240	S	.	.00030593	ND	.001050	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

------------- Site=Control Tower Method=Organics Analyte=Chrysene -------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	0.106	0.10600	DET	0.0214	mg/kg	
1995	SW8270	S	.	0.00922	ND	0.0209	mg/kg	
1995	SW8270	S	.	0.02239	ND	0.0232	mg/kg	
1995	SW8270	S	.	0.01818	ND	0.0211	mg/kg	
1995	SW8270	S	.	0.01707	ND	0.0213	mg/kg	
1995	SW8270	S	.	0.00025	ND	0.0239	mg/kg	

N = 6

------- Site=Control Tower Method=Organics Analyte=Di-n-octylphthalate --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.007004	ND	0.0315	mg/kg	
1995	SW8270	S	.	0.008720	ND	0.0307	mg/kg	
1995	SW8270	S	.	0.000495	ND	0.0341	mg/kg	
1995	SW8270	S	.	0.018218	ND	0.0310	mg/kg	
1995	SW8270	S	.	0.001221	ND	0.0312	mg/kg	X
1995	SW8270	S	.	0.005438	ND	0.0352	mg/kg	

N = 6

------ Site=Control Tower Method=Organics Analyte=Dibenz(a,h)anthracene -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.010943	ND	0.0268	mg/kg	
1995	SW8270	S	.	0.014783	ND	0.0262	mg/kg	
1995	SW8270	S	.	0.008031	ND	0.0290	mg/kg	
1995	SW8270	S	.	0.020312	ND	0.0264	mg/kg	
1995	SW8270	S	.	0.011940	ND	0.0266	mg/kg	X
1995	SW8270	S	.	0.013935	ND	0.0300	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

----------- Site=Control Tower Method=Organics Analyte=Dibenzofuran -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.012101	ND	0.0216	mg/kg	
1995	SW8270	S	.	0.003956	ND	0.0211	mg/kg	
1995	SW8270	S	.	0.010507	ND	0.0234	mg/kg	
1995	SW8270	S	.	0.018691	ND	0.0213	mg/kg	
1995	SW8270	S	.	0.013026	ND	0.0215	mg/kg	
1995	SW8270	S	.	0.023977	ND	0.0241	mg/kg	

N = 6

------- Site=Control Tower Method=Organics Analyte=Dibromochloromethane -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00066605	ND	.000799	mg/kg	
1995	SW8240	S	.	.00055553	ND	.000787	mg/kg	
1995	SW8240	S	.	.00021084	ND	.000864	mg/kg	
1995	SW8240	S	.	.00029454	ND	.000789	mg/kg	
1995	SW8240	S	.	.00004604	ND	.000801	mg/kg	X
1995	SW8240	S	.	.00020983	ND	.000894	mg/kg	

N = 6

-------- Site=Control Tower Method=Organics Analyte=Dibutyl phthalate ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.002241	ND	0.0204	mg/kg	
1995	SW8270	S	.	0.006084	ND	0.0199	mg/kg	
1995	SW8270	S	.	0.010324	ND	0.0221	mg/kg	
1995	SW8270	S	.	0.005494	ND	0.0201	mg/kg	
1995	SW8270	S	.	0.002964	ND	0.0202	mg/kg	
1995	SW8270	S	.	0.007527	ND	0.0228	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

------------- Site=Control Tower Method=Organics Analyte=Dieldrin -------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8080	S	0.003930	0.003930	DET	.002100	mg/kg	
1995	SW8080	S	0.000818	0.000818	DET	.000412	mg/kg	
1995	SW8080	S	0.000886	0.000886	DET	.000456	mg/kg	
1995	SW8080	S	.	0.000195	ND	.000256	mg/kg	
1995	SW8080	S	0.011600	0.011600	DET	.004170	mg/kg	
1995	SW8080	S	0.007450	0.007450	DET	.002350	mg/kg	

N = 6

------ Site=Control Tower Method=Organics Analyte=Diesel Range Organics -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	AK102	S	8.4	8.400	DET	4	mg/kg	
1995	AK102	S	220.0	220.000	DET	4	mg/kg	
1995	AK102	S	5.8	5.800	DET	4	mg/kg	
1995	AK102	S	.	3.124	ND	4	mg/kg	
1995	AK102	S	500.0	500.000	DET	4	mg/kg	
1995	AK102	S	22.0	22.000	DET	4	mg/kg	

N = 6

--------- Site=Control Tower Method=Organics Analyte=Diethylphthalate ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.013838	ND	0.0149	mg/kg	
1995	SW8270	S	.	0.009865	ND	0.0145	mg/kg	
1995	SW8270	S	.	0.003468	ND	0.0161	mg/kg	
1995	SW8270	S	.	0.012533	ND	0.0147	mg/kg	
1995	SW8270	S	.	0.003020	ND	0.0148	mg/kg	
1995	SW8270	S	.	0.014150	ND	0.0166	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

-------- Site=Control Tower Method=Organics Analyte=Dimethylphthalate ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.005846	ND	0.0128	mg/kg	
1995	SW8270	S	.	0.010688	ND	0.0124	mg/kg	
1995	SW8270	S	.	0.006515	ND	0.0138	mg/kg	
1995	SW8270	S	.	0.004348	ND	0.0126	mg/kg	
1995	SW8270	S	.	0.006812	ND	0.0127	mg/kg	
1995	SW8270	S	.	0.008961	ND	0.0142	mg/kg	

N = 6

Site=Control Tower Method=Organics Analyte=Diphenylamine (N-Nitrosodiphenylamin

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.008975	ND	0.0158	mg/kg	
1995	SW8270	S	.	0.003204	ND	0.0154	mg/kg	
1995	SW8270	S	.	0.015533	ND	0.0171	mg/kg	
1995	SW8270	S	.	0.003952	ND	0.0156	mg/kg	
1995	SW8270	S	.	0.010765	ND	0.0157	mg/kg	
1995	SW8270	S	.	0.014545	ND	0.0177	mg/kg	

N = 6

---------- Site=Control Tower Method=Organics Analyte=Endosulfan I ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8080	S	.	.0000801	ND	0.00475	mg/kg	
1995	SW8080	S	.000250	.0002500	DET	0.00093	mg/kg	J
1995	SW8080	S	.000651	.0006510	DET	0.00103	mg/kg	J
1995	SW8080	S	.000206	.0002060	DET	0.00094	mg/kg	KJ
1995	SW8080	S	.002920	.0029200	DET	0.01500	mg/kg	KJ
1995	SW8080	S	.003360	.0033600	DET	0.00530	mg/kg	KJ

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

---------- Site=Control Tower Method=Organics Analyte=Endosulfan II ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8080	S	.	.000018077	ND	.001980	mg/kg	
1995	SW8080	S	.	.000061895	ND	.000389	mg/kg	
1995	SW8080	S	.0000627	.000062700	DET	.000430	mg/kg	PJ
1995	SW8080	S	.0000674	.000067400	DET	.000393	mg/kg	PJ
1995	SW8080	S	.	.000016888	ND	.003930	mg/kg	
1995	SW8080	S	.	.000005137	ND	.002210	mg/kg	

N = 6

-------- Site=Control Tower Method=Organics Analyte=Endosulfan sulfate --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8080	S	.00204	.0020400	DET	.003530	mg/kg	KJ
1995	SW8080	S	.	.0004059	ND	.000556	mg/kg	
1995	SW8080	S	.	.0002421	ND	.000615	mg/kg	
1995	SW8080	S	.	.0005205	ND	.000562	mg/kg	
1995	SW8080	S	.	.0013724	ND	.005630	mg/kg	
1995	SW8080	S	.	.0014265	ND	.003170	mg/kg	

N = 6

------------- Site=Control Tower Method=Organics Analyte=Endrin -------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8080	S	.003490	.0034900	DET	.003790	mg/kg	BJ
1995	SW8080	S	.000548	.0005480	DET	.000742	mg/kg	BJ
1995	SW8080	S	.000755	.0007550	DET	.000821	mg/kg	BJ
1995	SW8080	S	.000972	.0009720	DET	.000750	mg/kg	B
1995	SW8080	S	.	.0004854	ND	.007520	mg/kg	
1995	SW8080	S	.	.0005222	ND	.004230	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

--------- Site=Control Tower Method=Organics Analyte=Endrin aldehyde ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8080	S	.	.0001464	ND	.002090	mg/kg	
1995	SW8080	S	.	.0000382	ND	.000409	mg/kg	
1995	SW8080	S	.000267	.0002670	DET	.000611	mg/kg	KJ
1995	SW8080	S	.	.0000874	ND	.000413	mg/kg	
1995	SW8080	S	.001790	.0017900	DET	.005590	mg/kg	KJ
1995	SW8080	S	.003260	.0032600	DET	.002330	mg/kg	

N = 6

----------- Site=Control Tower Method=Organics Analyte=Ethylbenzene -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00004379	ND	.000653	mg/kg	
1995	SW8240	S	.	.00047934	ND	.000643	mg/kg	
1995	SW8240	S	.	.00029150	ND	.000706	mg/kg	
1995	SW8240	S	.	.00059496	ND	.000644	mg/kg	
1995	SW8240	S	.	.00016764	ND	.000655	mg/kg	X
1995	SW8240	S	.	.00001441	ND	.000730	mg/kg	

N = 6

----------- Site=Control Tower Method=Organics Analyte=Fluoranthene -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	0.201	0.20100	DET	0.0210	mg/kg	
1995	SW8270	S	.	0.01106	ND	0.0205	mg/kg	
1995	SW8270	S	.	0.00103	ND	0.0228	mg/kg	
1995	SW8270	S	.	0.00017	ND	0.0207	mg/kg	
1995	SW8270	S	.	0.01303	ND	0.0209	mg/kg	
1995	SW8270	S	.	0.00674	ND	0.0235	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

------------- Site=Control Tower Method=Organics Analyte=Fluorene -------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.018613	ND	0.0223	mg/kg	
1995	SW8270	S	.	0.001397	ND	0.0217	mg/kg	
1995	SW8270	S	.	0.006478	ND	0.0241	mg/kg	
1995	SW8270	S	.	0.007075	ND	0.0220	mg/kg	
1995	SW8270	S	.	0.000757	ND	0.0221	mg/kg	
1995	SW8270	S	.	0.002528	ND	0.0249	mg/kg	

N = 6

----- Site=Control Tower Method=Organics Analyte=Gasoline Range Organics ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	AK101	S	.	0.94729	ND	1	mg/kg	
1995	AK101	S	.	0.18088	ND	1	mg/kg	
1995	AK101	S	.	0.59103	ND	1	mg/kg	
1995	AK101	S	.	0.36681	ND	1	mg/kg	
1995	AK101	S	.	0.66854	ND	1	mg/kg	
1995	AK101	S	.	0.70563	ND	1	mg/kg	

N = 6

------------ Site=Control Tower Method=Organics Analyte=Heptachlor ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8080	S	.001180	.0011800	DET	.001230	mg/kg	J
1995	SW8080	S	.000198	.0001980	DET	.000241	mg/kg	J
1995	SW8080	S	.000171	.0001710	DET	.000267	mg/kg	PJ
1995	SW8080	S	.	.0000383	ND	.000244	mg/kg	
1995	SW8080	S	.	.0000472	ND	.002440	mg/kg	
1995	SW8080	S	.	.0000337	ND	.001380	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

-------- Site=Control Tower Method=Organics Analyte=Heptachlor epoxide --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8080	S	.	.0007995	ND	.001300	mg/kg	
1995	SW8080	S	.	.0002067	ND	.000256	mg/kg	
1995	SW8080	S	.	.0000018	ND	.000283	mg/kg	
1995	SW8080	S	.	.0000153	ND	.000258	mg/kg	
1995	SW8080	S	.00193	.0019300	DET	.002350	mg/kg	KJ
1995	SW8080	S	.00263	.0026300	DET	.001460	mg/kg	P

N = 6

-------- Site=Control Tower Method=Organics Analyte=Hexachlorobenzene ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.005877	ND	0.0152	mg/kg	
1995	SW8270	S	.	0.001047	ND	0.0148	mg/kg	
1995	SW8270	S	.	0.008912	ND	0.0164	mg/kg	
1995	SW8270	S	.	0.011381	ND	0.0150	mg/kg	
1995	SW8270	S	.	0.008246	ND	0.0151	mg/kg	
1995	SW8270	S	.	0.000218	ND	0.0170	mg/kg	

N = 6

------- Site=Control Tower Method=Organics Analyte=Hexachlorobutadiene --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.005461	ND	0.0155	mg/kg	
1995	SW8270	S	.	0.004953	ND	0.0151	mg/kg	
1995	SW8270	S	.	0.009424	ND	0.0167	mg/kg	
1995	SW8270	S	.	0.011435	ND	0.0152	mg/kg	
1995	SW8270	S	.	0.003313	ND	0.0154	mg/kg	
1995	SW8270	S	.	0.000871	ND	0.0173	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

---- Site=Control Tower Method=Organics Analyte=Hexachlorocyclopentadiene -----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.05532	ND	0.190	mg/kg	
1995	SW8270	S	.	0.18177	ND	0.185	mg/kg	
1995	SW8270	S	.	0.19007	ND	0.206	mg/kg	
1995	SW8270	S	.	0.16766	ND	0.187	mg/kg	
1995	SW8270	S	.	0.14344	ND	0.189	mg/kg	
1995	SW8270	S	.	0.15549	ND	0.212	mg/kg	

N = 6

--------- Site=Control Tower Method=Organics Analyte=Hexachloroethane ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.004304	ND	0.0132	mg/kg	
1995	SW8270	S	.	0.005942	ND	0.0129	mg/kg	
1995	SW8270	S	.	0.013552	ND	0.0143	mg/kg	
1995	SW8270	S	.	0.006960	ND	0.0130	mg/kg	
1995	SW8270	S	.	0.004364	ND	0.0131	mg/kg	
1995	SW8270	S	.	0.010150	ND	0.0148	mg/kg	

N = 6

------ Site=Control Tower Method=Organics Analyte=Indeno(1,2,3-cd)pyrene ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	0.068	0.068000	DET	0.0244	mg/kg	
1995	SW8270	S	.	0.004333	ND	0.0238	mg/kg	
1995	SW8270	S	.	0.008825	ND	0.0264	mg/kg	
1995	SW8270	S	.	0.014615	ND	0.0241	mg/kg	
1995	SW8270	S	.	0.001737	ND	0.0243	mg/kg	X
1995	SW8270	S	.	0.000171	ND	0.0273	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

------------ Site=Control Tower Method=Organics Analyte=Isophorone ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.002802	ND	0.0129	mg/kg	
1995	SW8270	S	.	0.005821	ND	0.0126	mg/kg	
1995	SW8270	S	.	0.000685	ND	0.0140	mg/kg	
1995	SW8270	S	.	0.010224	ND	0.0127	mg/kg	
1995	SW8270	S	.	0.003770	ND	0.0128	mg/kg	
1995	SW8270	S	.	0.011014	ND	0.0144	mg/kg	

N = 6

----------- Site=Control Tower Method=Organics Analyte=Methoxychlor -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8080	S	.	0.018805	ND	0.02850	mg/kg	
1995	SW8080	S	.	0.004283	ND	0.00559	mg/kg	
1995	SW8080	S	.	0.005971	ND	0.00619	mg/kg	
1995	SW8080	S	.	0.004477	ND	0.00565	mg/kg	
1995	SW8080	S	.	0.023330	ND	0.05660	mg/kg	
1995	SW8080	S	.	0.012268	ND	0.03190	mg/kg	

N = 6

-------- Site=Control Tower Method=Organics Analyte=Methylene chloride --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.000522	.000522	DET	.000899	mg/kg	BJ
1995	SW8240	S	.000685	.000685	DET	.000886	mg/kg	BJ
1995	SW8240	S	.001460	.001460	DET	.000973	mg/kg	B
1995	SW8240	S	.000814	.000814	DET	.000888	mg/kg	BJ
1995	SW8240	S	.000975	.000975	DET	.000902	mg/kg	B
1995	SW8240	S	.000607	.000607	DET	.001010	mg/kg	BJ

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

------ Site=Control Tower Method=Organics Analyte=N-Nitrosodipropylamine ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	.0067273	ND	.00885	mg/kg	
1995	SW8270	S	.	.0047628	ND	.00863	mg/kg	
1995	SW8270	S	.	.0017139	ND	.00958	mg/kg	
1995	SW8270	S	.	.0048403	ND	.00872	mg/kg	
1995	SW8270	S	.	.0086213	ND	.00879	mg/kg	
1995	SW8270	S	.	.0047228	ND	.00989	mg/kg	

N = 6

----------- Site=Control Tower Method=Organics Analyte=Naphthalene ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.002243	ND	0.0206	mg/kg	
1995	SW8270	S	.	0.014351	ND	0.0201	mg/kg	
1995	SW8270	S	.	0.005457	ND	0.0223	mg/kg	
1995	SW8270	S	.	0.001335	ND	0.0203	mg/kg	
1995	SW8270	S	.	0.015007	ND	0.0205	mg/kg	
1995	SW8270	S	.	0.022566	ND	0.0230	mg/kg	

N = 6

----------- Site=Control Tower Method=Organics Analyte=Nitrobenzene -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	.0037855	ND	0.0108	mg/kg	
1995	SW8270	S	.	.0080255	ND	0.0105	mg/kg	
1995	SW8270	S	.	.0094087	ND	0.0117	mg/kg	
1995	SW8270	S	.	.0056481	ND	0.0106	mg/kg	
1995	SW8270	S	.	.0076377	ND	0.0107	mg/kg	
1995	SW8270	S	.	.0070825	ND	0.0121	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

------------- Site=Control Tower Method=Organics Analyte=PCB-1016 -------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8080	S	.	.0022341	ND	0.01270	mg/kg	
1995	SW8080	S	.	.0008321	ND	0.00249	mg/kg	
1995	SW8080	S	.	.0003875	ND	0.00276	mg/kg	
1995	SW8080	S	.	.0018530	ND	0.00252	mg/kg	
1995	SW8080	S	.	.0045875	ND	0.02530	mg/kg	
1995	SW8080	S	.	.0040637	ND	0.01420	mg/kg	

N = 6

------------- Site=Control Tower Method=Organics Analyte=PCB-1221 -------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8080	S	.	0.007644	ND	0.01210	mg/kg	
1995	SW8080	S	.	0.000725	ND	0.00237	mg/kg	
1995	SW8080	S	.	0.002318	ND	0.00262	mg/kg	
1995	SW8080	S	.	0.000418	ND	0.00240	mg/kg	
1995	SW8080	S	.	0.021550	ND	0.02400	mg/kg	
1995	SW8080	S	.	0.004921	ND	0.01350	mg/kg	

N = 6

------------- Site=Control Tower Method=Organics Analyte=PCB-1232 -------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8080	S	.	0.007428	ND	0.00913	mg/kg	
1995	SW8080	S	.	0.001633	ND	0.00179	mg/kg	
1995	SW8080	S	.	0.001772	ND	0.00198	mg/kg	
1995	SW8080	S	.	0.001133	ND	0.00181	mg/kg	
1995	SW8080	S	.	0.011320	ND	0.01810	mg/kg	
1995	SW8080	S	.	0.007270	ND	0.01020	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

------------- Site=Control Tower Method=Organics Analyte=PCB-1242 -------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8080	S	.	0.061686	ND	0.0626	mg/kg	
1995	SW8080	S	.	0.009752	ND	0.0123	mg/kg	
1995	SW8080	S	.	0.003286	ND	0.0136	mg/kg	
1995	SW8080	S	.	0.002646	ND	0.0124	mg/kg	
1995	SW8080	S	.	0.045884	ND	0.1240	mg/kg	
1995	SW8080	S	.	0.057880	ND	0.0699	mg/kg	

N = 6

------------- Site=Control Tower Method=Organics Analyte=PCB-1248 -------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8080	S	.	0.016527	ND	0.02180	mg/kg	
1995	SW8080	S	.	0.002162	ND	0.00426	mg/kg	
1995	SW8080	S	.	0.004588	ND	0.00472	mg/kg	
1995	SW8080	S	.	0.000087	ND	0.00431	mg/kg	
1995	SW8080	S	.	0.028137	ND	0.04320	mg/kg	
1995	SW8080	S	.	0.023738	ND	0.02430	mg/kg	

N = 6

------------- Site=Control Tower Method=Organics Analyte=PCB-1254 -------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8080	S	.	0.003864	ND	0.01610	mg/kg	
1995	SW8080	S	.	0.000957	ND	0.00315	mg/kg	
1995	SW8080	S	.	0.003257	ND	0.00348	mg/kg	
1995	SW8080	S	.	0.001543	ND	0.00318	mg/kg	
1995	SW8080	S	.	0.005846	ND	0.03190	mg/kg	
1995	SW8080	S	.	0.012555	ND	0.01790	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

------------ Site=Control Tower Method=Organics Analyte=PCB-1260 ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8080	S	.	0.008625	ND	0.01820	mg/kg	
1995	SW8080	S	.	0.003171	ND	0.00357	mg/kg	
1995	SW8080	S	.	0.000183	ND	0.00395	mg/kg	
1995	SW8080	S	.	0.002840	ND	0.00361	mg/kg	
1995	SW8080	S	.	0.028072	ND	0.03610	mg/kg	
1995	SW8080	S	.	0.016058	ND	0.02030	mg/kg	

N = 6

-------- Site=Control Tower Method=Organics Analyte=Pentachlorophenol --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	.0041016	ND	.00603	mg/kg	
1995	SW8270	S	.	.0041866	ND	.00588	mg/kg	
1995	SW8270	S	.	.0017139	ND	.00652	mg/kg	
1995	SW8270	S	.	.0032182	ND	.00594	mg/kg	
1995	SW8270	S	.	.0034044	ND	.00599	mg/kg	
1995	SW8270	S	.	.0002055	ND	.00673	mg/kg	

N = 6

---------- Site=Control Tower Method=Organics Analyte=Phenanthrene ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	0.127	0.12700	DET	0.0252	mg/kg	
1995	SW8270	S	.	0.02151	ND	0.0245	mg/kg	
1995	SW8270	S	.	0.00455	ND	0.0272	mg/kg	
1995	SW8270	S	.	0.00429	ND	0.0248	mg/kg	
1995	SW8270	S	.	0.01993	ND	0.0250	mg/kg	
1995	SW8270	S	.	0.00421	ND	0.0281	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

------------ Site=Control Tower Method=Organics Analyte=Phenol ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.004512	ND	0.0140	mg/kg	
1995	SW8270	S	.	0.005917	ND	0.0137	mg/kg	
1995	SW8270	S	.	0.008314	ND	0.0152	mg/kg	
1995	SW8270	S	.	0.010766	ND	0.0138	mg/kg	
1995	SW8270	S	.	0.006172	ND	0.0139	mg/kg	
1995	SW8270	S	.	0.008958	ND	0.0156	mg/kg	

N = 6

------------ Site=Control Tower Method=Organics Analyte=Pyrene ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	0.184	0.18400	DET	0.0258	mg/kg	
1995	SW8270	S	.	0.02057	ND	0.0251	mg/kg	
1995	SW8270	S	.	0.01941	ND	0.0279	mg/kg	
1995	SW8270	S	.	0.02036	ND	0.0254	mg/kg	
1995	SW8270	S	.	0.02226	ND	0.0256	mg/kg	
1995	SW8270	S	.	0.01641	ND	0.0288	mg/kg	

N = 6

------------ Site=Control Tower Method=Organics Analyte=Styrene ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00061761	ND	.000871	mg/kg	
1995	SW8240	S	.	.00058464	ND	.000858	mg/kg	
1995	SW8240	S	.	.00042774	ND	.000942	mg/kg	
1995	SW8240	S	.	.00037460	ND	.000860	mg/kg	
1995	SW8240	S	.	.00027768	ND	.000874	mg/kg	X
1995	SW8240	S	.	.00000886	ND	.000975	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

-------- Site=Control Tower Method=Organics Analyte=Tetrachloroethene ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00005291	ND	.00103	mg/kg	
1995	SW8240	S	.	.00000610	ND	.00101	mg/kg	
1995	SW8240	S	.	.00069062	ND	.00111	mg/kg	
1995	SW8240	S	.	.00058522	ND	.00101	mg/kg	
1995	SW8240	S	.	.00063616	ND	.00103	mg/kg	X
1995	SW8240	S	.	.00071388	ND	.00115	mg/kg	

N = 6

------------- Site=Control Tower Method=Organics Analyte=Toluene --------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00040395	ND	.000745	mg/kg	
1995	SW8240	S	.	.00032897	ND	.000734	mg/kg	
1995	SW8240	S	.	.00056119	ND	.000806	mg/kg	
1995	SW8240	S	.	.00000157	ND	.000735	mg/kg	
1995	SW8240	S	.	.00015807	ND	.000747	mg/kg	
1995	SW8240	S	.	.00001419	ND	.000834	mg/kg	

N = 6

------------ Site=Control Tower Method=Organics Analyte=Toxaphene -------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8080	S	.	0.019936	ND	0.02230	mg/kg	
1995	SW8080	S	.	0.001933	ND	0.00437	mg/kg	
1995	SW8080	S	.	0.002524	ND	0.00483	mg/kg	
1995	SW8080	S	.	0.000301	ND	0.00441	mg/kg	
1995	SW8080	S	.	0.026067	ND	0.04420	mg/kg	
1995	SW8080	S	.	0.020132	ND	0.02490	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

---- Site=Control Tower Method=Organics Analyte=Tribromomethane(Bromoform) ----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00002143	ND	.000626	mg/kg	
1995	SW8240	S	.	.00038401	ND	.000616	mg/kg	
1995	SW8240	S	.	.00048015	ND	.000677	mg/kg	
1995	SW8240	S	.	.00032689	ND	.000618	mg/kg	
1995	SW8240	S	.	.00014373	ND	.000628	mg/kg	X
1995	SW8240	S	.	.00027583	ND	.000700	mg/kg	

N = 6

--------- Site=Control Tower Method=Organics Analyte=Trichloroethene ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00003347	ND	.000748	mg/kg	
1995	SW8240	S	.	.00019654	ND	.000737	mg/kg	
1995	SW8240	S	.	.00031253	ND	.000809	mg/kg	
1995	SW8240	S	.	.00061989	ND	.000739	mg/kg	
1995	SW8240	S	.	.00028075	ND	.000750	mg/kg	
1995	SW8240	S	.	.00014130	ND	.000837	mg/kg	

N = 6

---------- Site=Control Tower Method=Organics Analyte=Vinyl acetate -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00021282	ND	.000866	mg/kg	
1995	SW8240	S	.	.00066144	ND	.000853	mg/kg	
1995	SW8240	S	.	.00012822	ND	.000937	mg/kg	
1995	SW8240	S	.	.00016602	ND	.000855	mg/kg	
1995	SW8240	S	.	.00011078	ND	.000869	mg/kg	
1995	SW8240	S	.	.00023479	ND	.000969	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

---------- Site=Control Tower Method=Organics Analyte=Vinyl chloride ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00041321	ND	.000722	mg/kg	
1995	SW8240	S	.	.00051046	ND	.000711	mg/kg	
1995	SW8240	S	.	.00012665	ND	.000781	mg/kg	
1995	SW8240	S	.	.00062755	ND	.000713	mg/kg	
1995	SW8240	S	.	.00012580	ND	.000724	mg/kg	
1995	SW8240	S	.	.00034953	ND	.000808	mg/kg	

N = 6

------------ Site=Control Tower Method=Organics Analyte=alpha-BHC -------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8080	S	.	.0007933	ND	.002240	mg/kg	
1995	SW8080	S	.	.0004272	ND	.000439	mg/kg	
1995	SW8080	S	.	.0000185	ND	.000485	mg/kg	
1995	SW8080	S	.	.0003751	ND	.000443	mg/kg	
1995	SW8080	S	.00703	.0070300	DET	.004440	mg/kg	
1995	SW8080	S	.	.0020061	ND	.002500	mg/kg	

N = 6

------------- Site=Control Tower Method=Organics Analyte=beta-BHC -------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8080	S	.	.0014343	ND	.001770	mg/kg	
1995	SW8080	S	.	.0002746	ND	.000347	mg/kg	
1995	SW8080	S	.	.0001499	ND	.000383	mg/kg	
1995	SW8080	S	.	.0000094	ND	.000350	mg/kg	
1995	SW8080	S	.00361	.0036100	DET	.005320	mg/kg	KJ
1995	SW8080	S	.	.0001165	ND	.001980	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

---- Site=Control Tower Method=Organics Analyte=bis(2-Chloroethoxy)methane ----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.012802	ND	0.0140	mg/kg	
1995	SW8270	S	.	0.013027	ND	0.0137	mg/kg	
1995	SW8270	S	.	0.002113	ND	0.0152	mg/kg	
1995	SW8270	S	.	0.000453	ND	0.0138	mg/kg	
1995	SW8270	S	.	0.011439	ND	0.0139	mg/kg	
1995	SW8270	S	.	0.008129	ND	0.0156	mg/kg	

N = 6

----- Site=Control Tower Method=Organics Analyte=bis(2-Chloroethyl)ether ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.007683	ND	0.0140	mg/kg	
1995	SW8270	S	.	0.013134	ND	0.0137	mg/kg	
1995	SW8270	S	.	0.011587	ND	0.0152	mg/kg	
1995	SW8270	S	.	0.009666	ND	0.0138	mg/kg	
1995	SW8270	S	.	0.007663	ND	0.0139	mg/kg	
1995	SW8270	S	.	0.003383	ND	0.0156	mg/kg	

N = 6

--- Site=Control Tower Method=Organics Analyte=bis(2-Chloroisopropyl)ether ----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.013864	ND	0.0146	mg/kg	
1995	SW8270	S	.	0.002714	ND	0.0142	mg/kg	
1995	SW8270	S	.	0.005470	ND	0.0158	mg/kg	
1995	SW8270	S	.	0.009944	ND	0.0144	mg/kg	
1995	SW8270	S	.	0.005891	ND	0.0145	mg/kg	
1995	SW8270	S	.	0.000566	ND	0.0163	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

---- Site=Control Tower Method=Organics Analyte=bis(2-Ethylhexyl)phthalate ----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.014873	ND	0.0238	mg/kg	
1995	SW8270	S	.	0.017289	ND	0.0232	mg/kg	
1995	SW8270	S	.	0.001904	ND	0.0257	mg/kg	
1995	SW8270	S	.	0.008975	ND	0.0234	mg/kg	
1995	SW8270	S	0.0938	0.093800	DET	0.0236	mg/kg	
1995	SW8270	S	.	0.024877	ND	0.0265	mg/kg	

N = 6

------ Site=Control Tower Method=Organics Analyte=cis-1,2-Dichloroethene ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00030162	ND	.000897	mg/kg	
1995	SW8240	S	.	.00082123	ND	.000884	mg/kg	
1995	SW8240	S	.	.00001777	ND	.000971	mg/kg	
1995	SW8240	S	.	.00042290	ND	.000886	mg/kg	
1995	SW8240	S	.	.00026017	ND	.000900	mg/kg	
1995	SW8240	S	.	.00038768	ND	.001000	mg/kg	

N = 6

----- Site=Control Tower Method=Organics Analyte=cis-1,3-Dichloropropene ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00028478	ND	.000640	mg/kg	
1995	SW8240	S	.	.00004907	ND	.000631	mg/kg	
1995	SW8240	S	.	.00040122	ND	.000693	mg/kg	
1995	SW8240	S	.	.00061629	ND	.000632	mg/kg	
1995	SW8240	S	.	.00042942	ND	.000642	mg/kg	
1995	SW8240	S	.	.00000899	ND	.000716	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

------------ Site=Control Tower Method=Organics Analyte=delta-BHC ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8080	S	.	0.000026	ND	.001140	mg/kg	
1995	SW8080	S	.	0.000005	ND	.000182	mg/kg	
1995	SW8080	S	0.00104	0.001040	DET	.000247	mg/kg	
1995	SW8080	S	.	0.000026	ND	.000184	mg/kg	
1995	SW8080	S	.	0.000659	ND	.002260	mg/kg	
1995	SW8080	S	0.01030	0.010300	DET	.001270	mg/kg	

N = 6

-------- Site=Control Tower Method=Organics Analyte=gamma-BHC(Lindane) --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8080	S	.	.0002512	ND	.000705	mg/kg	
1995	SW8080	S	.00078	.0007800	DET	.000400	mg/kg	
1995	SW8080	S	.	.0000432	ND	.000442	mg/kg	
1995	SW8080	S	.	.0001033	ND	.000404	mg/kg	
1995	SW8080	S	.	.0006366	ND	.004050	mg/kg	
1995	SW8080	S	.00601	.0060100	DET	.002280	mg/kg	

N = 6

----------- Site=Control Tower Method=Organics Analyte=m&p-Xylenes -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.0001825	ND	.00154	mg/kg	
1995	SW8240	S	.	.0003620	ND	.00152	mg/kg	
1995	SW8240	S	.	.0011428	ND	.00167	mg/kg	
1995	SW8240	S	.	.0013163	ND	.00152	mg/kg	
1995	SW8240	S	.	.0005582	ND	.00155	mg/kg	X
1995	SW8240	S	.	.0008113	ND	.00173	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

------------ Site=Control Tower Method=Organics Analyte=o-Xylene ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00035904	ND	.000699	mg/kg	
1995	SW8240	S	.	.00039650	ND	.000689	mg/kg	
1995	SW8240	S	.	.00019757	ND	.000756	mg/kg	
1995	SW8240	S	.	.00019368	ND	.000690	mg/kg	
1995	SW8240	S	.	.00057800	ND	.000702	mg/kg	X
1995	SW8240	S	.	.00002868	ND	.000783	mg/kg	

N = 6

----- Site=Control Tower Method=Organics Analyte=trans-1,2-Dichloroethene -----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.0009952	ND	.00109	mg/kg	
1995	SW8240	S	.	.0005700	ND	.00107	mg/kg	
1995	SW8240	S	.	.0000620	ND	.00118	mg/kg	
1995	SW8240	S	.	.0000015	ND	.00107	mg/kg	
1995	SW8240	S	.	.0003512	ND	.00109	mg/kg	
1995	SW8240	S	.	.0010301	ND	.00122	mg/kg	

N = 6

---- Site=Control Tower Method=Organics Analyte=trans-1,3-Dichloropropene -----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00050643	ND	.000603	mg/kg	
1995	SW8240	S	.	.00007832	ND	.000594	mg/kg	
1995	SW8240	S	.	.00026735	ND	.000652	mg/kg	
1995	SW8240	S	.	.00016639	ND	.000595	mg/kg	
1995	SW8240	S	.	.00010275	ND	.000605	mg/kg	
1995	SW8240	S	.	.00056642	ND	.000675	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

------------ Site=Southeast Runway Method=Inorganics Analyte=Lead ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW7421	S	51.3	51.3	DET	1.380	mg/kg	
1995	SW7421	S	12.9	12.9	DET	0.288	mg/kg	
1995	SW7421	S	36.1	36.1	DET	0.754	mg/kg	
1995	SW7421	S	8.9	8.9	DET	0.440	mg/kg	S

N = 4

----- Site=Southeast Runway Method=Organics Analyte=1,1,1-Trichloroethane -----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00010617	ND	.000833	mg/kg	
1995	SW8240	S	.	.00074774	ND	.000910	mg/kg	
1995	SW8240	S	.	.00077572	ND	.000928	mg/kg	
1995	SW8240	S	.	.00004724	ND	.001040	mg/kg	

N = 4

--- Site=Southeast Runway Method=Organics Analyte=1,1,2,2-Tetrachloroethane ---

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00065202	ND	.00119	mg/kg	
1995	SW8240	S	.	.00096726	ND	.00130	mg/kg	X
1995	SW8240	S	.	.00012276	ND	.00132	mg/kg	X
1995	SW8240	S	.	.00007282	ND	.00148	mg/kg	

N = 4

----- Site=Southeast Runway Method=Organics Analyte=1,1,2-Trichloroethane -----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00006321	ND	.000860	mg/kg	
1995	SW8240	S	.	.00054474	ND	.000938	mg/kg	X
1995	SW8240	S	.	.00069313	ND	.000957	mg/kg	X

a. Random uniform numbers, between zero and the lesser of the minimum result a

----- Site=Southeast Runway Method=Organics Analyte=1,1,2-Trichloroethane -----
(continued)

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00086889	ND	.00107	mg/kg	

N = 4

------ Site=Southeast Runway Method=Organics Analyte=1,1-Dichloroethane -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00087352	ND	.00113	mg/kg	
1995	SW8240	S	.	.00091960	ND	.00124	mg/kg	
1995	SW8240	S	.	.00068619	ND	.00126	mg/kg	
1995	SW8240	S	.	.00068507	ND	.00141	mg/kg	

N = 4

------ Site=Southeast Runway Method=Organics Analyte=1,1-Dichloroethene -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00021499	ND	.000793	mg/kg	
1995	SW8240	S	.	.00013900	ND	.000866	mg/kg	
1995	SW8240	S	.	.00075076	ND	.000883	mg/kg	
1995	SW8240	S	.	.00023345	ND	.000988	mg/kg	

N = 4

---- Site=Southeast Runway Method=Organics Analyte=1,2,4-Trichlorobenzene -----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.015139	ND	0.0152	mg/kg	
1995	SW8270	S	.	0.006219	ND	0.1670	mg/kg	
1995	SW8270	S	.	0.008238	ND	0.0171	mg/kg	
1995	SW8270	S	.	0.001602	ND	0.0210	mg/kg	

N = 4

a. Random uniform numbers, between zero and the lesser of the minimum result a

------ Site=Southeast Runway Method=Organics Analyte=1,2-Dichlorobenzene ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.01178	ND	0.0157	mg/kg	
1995	SW8270	S	.	0.15791	ND	0.1730	mg/kg	
1995	SW8270	S	.	0.01723	ND	0.0178	mg/kg	
1995	SW8270	S	.	0.00561	ND	0.0121	mg/kg	

N = 4

------ Site=Southeast Runway Method=Organics Analyte=1,2-Dichloroethane -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00035288	ND	.000819	mg/kg	
1995	SW8240	S	.	.00022464	ND	.000894	mg/kg	
1995	SW8240	S	.	.00072838	ND	.000912	mg/kg	
1995	SW8240	S	.	.00027851	ND	.001020	mg/kg	

N = 4

------ Site=Southeast Runway Method=Organics Analyte=1,2-Dichloropropane ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00003581	ND	.000640	mg/kg	
1995	SW8240	S	.	.00012751	ND	.000698	mg/kg	
1995	SW8240	S	.	.00009361	ND	.000712	mg/kg	
1995	SW8240	S	.	.00018335	ND	.000797	mg/kg	

N = 4

------ Site=Southeast Runway Method=Organics Analyte=1,3-Dichlorobenzene ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.003576	ND	0.0157	mg/kg	
1995	SW8270	S	.	0.080674	ND	0.1720	mg/kg	
1995	SW8270	S	.	0.017557	ND	0.0177	mg/kg	

a. Random uniform numbers, between zero and the lesser of the minimum result a

------ Site=Southeast Runway Method=Organics Analyte=1,3-Dichlorobenzene ------
(continued)

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	.0064447	ND	0.0135	mg/kg	

N = 4

------ Site=Southeast Runway Method=Organics Analyte=1,4-Dichlorobenzene ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.01357	ND	0.0223	mg/kg	
1995	SW8270	S	.	0.17767	ND	0.2450	mg/kg	
1995	SW8270	S	.	0.00600	ND	0.0252	mg/kg	
1995	SW8270	S	.	0.00616	ND	0.0161	mg/kg	

N = 4

----- Site=Southeast Runway Method=Organics Analyte=2,4,5-Trichlorophenol -----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.007991	ND	0.0111	mg/kg	
1995	SW8270	S	.	0.098570	ND	0.1220	mg/kg	
1995	SW8270	S	.	0.006300	ND	0.0125	mg/kg	
1995	SW8270	S	.	0.017503	ND	0.0208	mg/kg	

N = 4

----- Site=Southeast Runway Method=Organics Analyte=2,4,6-Trichlorophenol -----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.00619	ND	0.0246	mg/kg	
1995	SW8270	S	.	0.12723	ND	0.2710	mg/kg	
1995	SW8270	S	.	0.01165	ND	0.0278	mg/kg	
1995	SW8270	S	.	0.00741	ND	0.0148	mg/kg	

N = 4

a. Random uniform numbers, between zero and the lesser of the minimum result a

------ Site=Southeast Runway Method=Organics Analyte=2,4-Dichlorophenol -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.001029	ND	0.00860	mg/kg	
1995	SW8270	S	.	0.087715	ND	0.09450	mg/kg	
1995	SW8270	S	.	0.004691	ND	0.00972	mg/kg	
1995	SW8270	S	.	0.012652	ND	0.01660	mg/kg	

N = 4

------ Site=Southeast Runway Method=Organics Analyte=2,4-Dimethylphenol -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.007565	ND	0.0236	mg/kg	
1995	SW8270	S	.	0.059822	ND	0.2590	mg/kg	
1995	SW8270	S	.	0.006057	ND	0.0267	mg/kg	
1995	SW8270	S	.	0.009803	ND	0.0367	mg/kg	

N = 4

------- Site=Southeast Runway Method=Organics Analyte=2,4-Dinitrophenol -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.00441	ND	0.0457	mg/kg	
1995	SW8270	S	.	0.45794	ND	0.5020	mg/kg	
1995	SW8270	S	.	0.02927	ND	0.0517	mg/kg	
1995	SW8270	S	.	0.01287	ND	0.0622	mg/kg	

N = 4

------ Site=Southeast Runway Method=Organics Analyte=2,4-Dinitrotoluene -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.00732	ND	0.0139	mg/kg	
1995	SW8270	S	.	0.10939	ND	0.1530	mg/kg	
1995	SW8270	S	.	0.01305	ND	0.0157	mg/kg	

a. Random uniform numbers, between zero and the lesser of the minimum result a

------ Site=Southeast Runway Method=Organics Analyte=2,4-Dinitrotoluene -------
(continued)

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.016868	ND	0.0273	mg/kg	

N = 4

------ Site=Southeast Runway Method=Organics Analyte=2,6-Dinitrotoluene -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.01437	ND	0.0301	mg/kg	
1995	SW8270	S	.	0.18843	ND	0.3300	mg/kg	
1995	SW8270	S	.	0.02908	ND	0.0340	mg/kg	
1995	SW8270	S	.	0.01255	ND	0.0218	mg/kg	

N = 4

-------- Site=Southeast Runway Method=Organics Analyte=2-Butanone(MEK) --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.0010483	ND	.00398	mg/kg	
1995	SW8240	S	.	.0006729	ND	.00434	mg/kg	
1995	SW8240	S	.	.0040565	ND	.00443	mg/kg	
1995	SW8240	S	.	.0017756	ND	.00495	mg/kg	

N = 4

--- Site=Southeast Runway Method=Organics Analyte=2-Chloroethyl vinyl ether ---

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00001668	ND	.000917	mg/kg	
1995	SW8240	S	.	.00062039	ND	.001000	mg/kg	
1995	SW8240	S	.	.00065997	ND	.001020	mg/kg	
1995	SW8240	S	.	.00034591	ND	.001140	mg/kg	

N = 4

a. Random uniform numbers, between zero and the lesser of the minimum result a

------ Site=Southeast Runway Method=Organics Analyte=2-Chloronaphthalene ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.01264	ND	0.0185	mg/kg	
1995	SW8270	S	.	0.15676	ND	0.2030	mg/kg	
1995	SW8270	S	.	0.00278	ND	0.0209	mg/kg	
1995	SW8270	S	.	0.00095	ND	0.0377	mg/kg	

N = 4

-------- Site=Southeast Runway Method=Organics Analyte=2-Chlorophenol ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.00009	ND	0.0163	mg/kg	
1995	SW8270	S	.	0.11404	ND	0.1790	mg/kg	
1995	SW8270	S	.	0.00001	ND	0.0184	mg/kg	
1995	SW8270	S	.	0.00817	ND	0.0140	mg/kg	

N = 4

---------- Site=Southeast Runway Method=Organics Analyte=2-Hexanone -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.0005298	ND	.00272	mg/kg	
1995	SW8240	S	.	.0010556	ND	.00297	mg/kg	X
1995	SW8240	S	.	.0003231	ND	.00303	mg/kg	X
1995	SW8240	S	.	.0011043	ND	.00339	mg/kg	

N = 4

------ Site=Southeast Runway Method=Organics Analyte=2-Methylnaphthalene ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.017882	ND	0.0239	mg/kg	
1995	SW8270	S	.	0.014672	ND	0.2630	mg/kg	
1995	SW8270	S	0.0336	0.033600	DET	0.0270	mg/kg	

a. Random uniform numbers, between zero and the lesser of the minimum result a

------ Site=Southeast Runway Method=Organics Analyte=2-Methylnaphthalene ------
(continued)

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	.0090584	ND	0.0265	mg/kg	

N = 4

--- Site=Southeast Runway Method=Organics Analyte=2-Methylphenol(o-cresol) ----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.007930	ND	0.0107	mg/kg	
1995	SW8270	S	.	0.026067	ND	0.1180	mg/kg	
1995	SW8270	S	.	0.004451	ND	0.0121	mg/kg	
1995	SW8270	S	.	0.006622	ND	0.0104	mg/kg	

N = 4

-------- Site=Southeast Runway Method=Organics Analyte=2-Nitroaniline ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.004085	ND	0.00628	mg/kg	
1995	SW8270	S	.	0.003804	ND	0.06900	mg/kg	
1995	SW8270	S	.	0.006813	ND	0.00710	mg/kg	
1995	SW8270	S	.	0.024361	ND	0.02480	mg/kg	

N = 4

--------- Site=Southeast Runway Method=Organics Analyte=2-Nitrophenol ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.008560	ND	0.0179	mg/kg	
1995	SW8270	S	.	0.099364	ND	0.1970	mg/kg	
1995	SW8270	S	.	0.000610	ND	0.0202	mg/kg	
1995	SW8270	S	.	0.017352	ND	0.0351	mg/kg	

N = 4

a. Random uniform numbers, between zero and the lesser of the minimum result a

---- Site=Southeast Runway Method=Organics Analyte=3,3'-Dichlorobenzidine -----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.009534	ND	0.0109	mg/kg	
1995	SW8270	S	.	0.084504	ND	0.1200	mg/kg	
1995	SW8270	S	.	0.006323	ND	0.0123	mg/kg	
1995	SW8270	S	.	0.021906	ND	0.0299	mg/kg	

N = 4

-------- Site=Southeast Runway Method=Organics Analyte=3-Nitroaniline ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.000367	ND	0.0152	mg/kg	
1995	SW8270	S	.	0.010069	ND	0.1670	mg/kg	
1995	SW8270	S	.	0.002126	ND	0.0172	mg/kg	
1995	SW8270	S	.	0.002978	ND	0.0124	mg/kg	

N = 4

-- Site=Southeast Runway Method=Organics Analyte=4,6-Dinitro-2-methylphenol ---

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.01440	ND	0.1400	mg/kg	
1995	SW8270	S	.	1.17576	ND	1.5400	mg/kg	
1995	SW8270	S	.	0.11498	ND	0.1590	mg/kg	
1995	SW8270	S	.	0.00171	ND	0.0166	mg/kg	

N = 4

-- Site=Southeast Runway Method=Organics Analyte=4-Bromophenyl phenyl ether ---

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.003145	ND	0.0132	mg/kg	
1995	SW8270	S	.	0.040330	ND	0.1450	mg/kg	
1995	SW8270	S	.	0.000582	ND	0.0149	mg/kg	

a. Random uniform numbers, between zero and the lesser of the minimum result a

-- Site=Southeast Runway Method=Organics Analyte=4-Bromophenyl phenyl ether --- (continued)

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	.0073511	ND	0.0192	mg/kg	

N = 4

---- Site=Southeast Runway Method=Organics Analyte=4-Chloro-3-methylphenol ----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.001703	ND	0.00660	mg/kg	
1995	SW8270	S	.	0.046584	ND	0.07250	mg/kg	
1995	SW8270	S	.	0.001474	ND	0.00746	mg/kg	
1995	SW8270	S	.	0.005885	ND	0.02970	mg/kg	

N = 4

-------- Site=Southeast Runway Method=Organics Analyte=4-Chloroaniline --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.003048	ND	0.0152	mg/kg	
1995	SW8270	S	.	0.077264	ND	0.1670	mg/kg	
1995	SW8270	S	.	0.011715	ND	0.0171	mg/kg	
1995	SW8270	S	.	0.010207	ND	0.0334	mg/kg	

N = 4

-- Site=Southeast Runway Method=Organics Analyte=4-Chlorophenyl phenyl ether --

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.007811	ND	0.02300	mg/kg	
1995	SW8270	S	.	0.081954	ND	0.25300	mg/kg	
1995	SW8270	S	.	0.003422	ND	0.02600	mg/kg	
1995	SW8270	S	.	0.003972	ND	0.00934	mg/kg	

N = 4

a. Random uniform numbers, between zero and the lesser of the minimum result a

-- Site=Southeast Runway Method=Organics Analyte=4-Methyl-2-pentanone(MIBK) ---

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.0007119	ND	.00242	mg/kg	
1995	SW8240	S	.	.0008940	ND	.00264	mg/kg	
1995	SW8240	S	.	.0003867	ND	.00269	mg/kg	
1995	SW8240	S	.	.0029481	ND	.00301	mg/kg	

N = 4

- Site=Southeast Runway Method=Organics Analyte=4-Methylphenol/3-Methylphenol -

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.004572	ND	0.0145	mg/kg	
1995	SW8270	S	.	0.010531	ND	0.1600	mg/kg	
1995	SW8270	S	.	0.014058	ND	0.0164	mg/kg	
1995	SW8270	S	.	0.002552	ND	0.0222	mg/kg	

N = 4

-------- Site=Southeast Runway Method=Organics Analyte=4-Nitroaniline ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.003661	ND	0.0149	mg/kg	
1995	SW8270	S	.	0.034601	ND	0.1640	mg/kg	
1995	SW8270	S	.	0.014436	ND	0.0169	mg/kg	
1995	SW8270	S	.	0.019795	ND	0.0274	mg/kg	

N = 4

--------- Site=Southeast Runway Method=Organics Analyte=4-Nitrophenol ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.00304	ND	0.0156	mg/kg	
1995	SW8270	S	.	0.11795	ND	0.1710	mg/kg	
1995	SW8270	S	.	0.01099	ND	0.0176	mg/kg	

a. Random uniform numbers, between zero and the lesser of the minimum result a

--------- Site=Southeast Runway Method=Organics Analyte=4-Nitrophenol ---------
(continued)

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.041650	ND	0.0536	mg/kg	

N = 4

--------- Site=Southeast Runway Method=Organics Analyte=Acenaphthene ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.007763	ND	0.0157	mg/kg	
1995	SW8270	S	.	0.001738	ND	0.1730	mg/kg	
1995	SW8270	S	.	0.015379	ND	0.0178	mg/kg	
1995	SW8270	S	.	0.027648	ND	0.0301	mg/kg	

N = 4

-------- Site=Southeast Runway Method=Organics Analyte=Acenaphthylene ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.00460	ND	0.0141	mg/kg	
1995	SW8270	S	.	0.14562	ND	0.1550	mg/kg	
1995	SW8270	S	.	0.00902	ND	0.0159	mg/kg	
1995	SW8270	S	.	0.00303	ND	0.0213	mg/kg	

N = 4

------------ Site=Southeast Runway Method=Organics Analyte=Acetone ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.0000420	ND	.00507	mg/kg	
1995	SW8240	S	.	.0016222	ND	.00553	mg/kg	
1995	SW8240	S	.	.0015939	ND	.00564	mg/kg	
1995	SW8240	S	.	.0044545	ND	.00631	mg/kg	

N = 4

a. Random uniform numbers, between zero and the lesser of the minimum result a

---------- Site=Southeast Runway Method=Organics Analyte=Anthracene -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	0.0533	0.053300	DET	0.0189	mg/kg	
1995	SW8270	S	.	0.000056	ND	0.2080	mg/kg	
1995	SW8270	S	.	0.011325	ND	0.0214	mg/kg	
1995	SW8270	S	.	0.024519	ND	0.0289	mg/kg	

N = 4

------------- Site=Southeast Runway Method=Organics Analyte=Benzene ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.0003480	ND	.000910	mg/kg	
1995	SW8240	S	.	.0004860	ND	.000993	mg/kg	
1995	SW8240	S	.	.0002548	ND	.001010	mg/kg	
1995	SW8240	S	.	.0011006	ND	.001130	mg/kg	

N = 4

------ Site=Southeast Runway Method=Organics Analyte=Benzo(a)anthracene -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	0.354	0.35400	DET	0.0208	mg/kg	
1995	SW8270	S	.	0.11514	ND	0.2280	mg/kg	
1995	SW8270	S	.	0.02006	ND	0.0235	mg/kg	
1995	SW8270	S	.	0.01114	ND	0.0282	mg/kg	

N = 4

-------- Site=Southeast Runway Method=Organics Analyte=Benzo(a)pyrene ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	0.554	0.55400	DET	0.0218	mg/kg	
1995	SW8270	S	.	0.20354	ND	0.2400	mg/kg	
1995	SW8270	S	.	0.01447	ND	0.0246	mg/kg	

a. Random uniform numbers, between zero and the lesser of the minimum result a

-------- Site=Southeast Runway Method=Organics Analyte=Benzo(a)pyrene ---------
(continued)

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	.0055482	ND	0.0232	mg/kg	

N = 4

----- Site=Southeast Runway Method=Organics Analyte=Benzo(b)fluoranthene ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	0.447	0.44700	DET	0.0196	mg/kg	
1995	SW8270	S	.	0.17925	ND	0.2150	mg/kg	
1995	SW8270	S	.	0.00667	ND	0.0221	mg/kg	
1995	SW8270	S	.	0.01802	ND	0.0508	mg/kg	

N = 4

----- Site=Southeast Runway Method=Organics Analyte=Benzo(g,h,i)perylene ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	0.212	0.21200	DET	0.0270	mg/kg	
1995	SW8270	S	.	0.04568	ND	0.2970	mg/kg	
1995	SW8270	S	.	0.02118	ND	0.0305	mg/kg	
1995	SW8270	S	.	0.00291	ND	0.0289	mg/kg	

N = 4

----- Site=Southeast Runway Method=Organics Analyte=Benzo(k)fluoranthene ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	0.461	0.46100	DET	0.0341	mg/kg	
1995	SW8270	S	.	0.17693	ND	0.3750	mg/kg	
1995	SW8270	S	.	0.00800	ND	0.0386	mg/kg	
1995	SW8270	S	.	0.06384	ND	0.0819	mg/kg	

N = 4

a. Random uniform numbers, between zero and the lesser of the minimum result a

--------- Site=Southeast Runway Method=Organics Analyte=Benzoic acid ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.13010	ND	0.219	mg/kg	
1995	SW8270	S	.	0.65882	ND	2.400	mg/kg	
1995	SW8270	S	.	0.04415	ND	0.247	mg/kg	
1995	SW8270	S	.	0.28392	ND	0.296	mg/kg	

N = 4

-------- Site=Southeast Runway Method=Organics Analyte=Benzyl alcohol ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.01245	ND	0.0403	mg/kg	
1995	SW8270	S	.	0.43755	ND	0.4420	mg/kg	
1995	SW8270	S	.	0.03806	ND	0.0455	mg/kg	
1995	SW8270	S	.	0.02560	ND	0.0284	mg/kg	

N = 4

----- Site=Southeast Runway Method=Organics Analyte=Bromodichloromethane ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00059347	ND	.000820	mg/kg	
1995	SW8240	S	.	.00088123	ND	.000895	mg/kg	
1995	SW8240	S	.	.00048526	ND	.000913	mg/kg	
1995	SW8240	S	.	.00045007	ND	.001020	mg/kg	

N = 4

--------- Site=Southeast Runway Method=Organics Analyte=Bromomethane ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00030058	ND	.00112	mg/kg	
1995	SW8240	S	.	.00034015	ND	.00122	mg/kg	
1995	SW8240	S	.	.00005160	ND	.00125	mg/kg	

a. Random uniform numbers, between zero and the lesser of the minimum result a

--------- Site=Southeast Runway Method=Organics Analyte=Bromomethane ----------
(continued)

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00087556	ND	.0014	mg/kg	

N = 4

----- Site=Southeast Runway Method=Organics Analyte=Butylbenzylphthalate ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.00164	ND	0.0230	mg/kg	
1995	SW8270	S	.	0.15695	ND	0.2520	mg/kg	
1995	SW8270	S	.	0.00227	ND	0.0260	mg/kg	
1995	SW8270	S	.	0.00400	ND	0.0104	mg/kg	

N = 4

------- Site=Southeast Runway Method=Organics Analyte=Carbon disulfide --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00014764	ND	.000791	mg/kg	
1995	SW8240	S	.	.00011471	ND	.000863	mg/kg	
1995	SW8240	S	.	.00026139	ND	.000880	mg/kg	
1995	SW8240	S	.	.00092355	ND	.000985	mg/kg	

N = 4

----- Site=Southeast Runway Method=Organics Analyte=Carbon tetrachloride ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00032710	ND	.000894	mg/kg	
1995	SW8240	S	.	.00088300	ND	.000976	mg/kg	
1995	SW8240	S	.	.00050467	ND	.000996	mg/kg	
1995	SW8240	S	.	.00090931	ND	.001110	mg/kg	

N = 4

a. Random uniform numbers, between zero and the lesser of the minimum result a

--------- Site=Southeast Runway Method=Organics Analyte=Chlorobenzene ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00073418	ND	.000813	mg/kg	
1995	SW8240	S	.	.00078870	ND	.000887	mg/kg	X
1995	SW8240	S	.	.00087445	ND	.000905	mg/kg	X
1995	SW8240	S	.	.00089350	ND	.001010	mg/kg	

N = 4

--------- Site=Southeast Runway Method=Organics Analyte=Chloroethane ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.0002895	ND	.00113	mg/kg	
1995	SW8240	S	.	.0006389	ND	.00124	mg/kg	
1995	SW8240	S	.	.0002291	ND	.00126	mg/kg	
1995	SW8240	S	.	.0012192	ND	.00141	mg/kg	

N = 4

---------- Site=Southeast Runway Method=Organics Analyte=Chloroform -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.0010859	ND	.00110	mg/kg	
1995	SW8240	S	.	.0004594	ND	.00120	mg/kg	
1995	SW8240	S	.	.0011707	ND	.00122	mg/kg	
1995	SW8240	S	.	.0009459	ND	.00137	mg/kg	

N = 4

--------- Site=Southeast Runway Method=Organics Analyte=Chloromethane ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00026552	ND	.00099	mg/kg	
1995	SW8240	S	.	.00048586	ND	.00108	mg/kg	
1995	SW8240	S	.	.00005183	ND	.00110	mg/kg	

a. Random uniform numbers, between zero and the lesser of the minimum result a

--------- Site=Southeast Runway Method=Organics Analyte=Chloromethane ---------
(continued)

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00040312	ND	.00123	mg/kg	

N = 4

----------- Site=Southeast Runway Method=Organics Analyte=Chrysene -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	0.515	0.51500	DET	0.0223	mg/kg	
1995	SW8270	S	.	0.10443	ND	0.2450	mg/kg	
1995	SW8270	S	.	0.01814	ND	0.0252	mg/kg	
1995	SW8270	S	.	0.02414	ND	0.0376	mg/kg	

N = 4

------ Site=Southeast Runway Method=Organics Analyte=Di-n-octylphthalate ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.003378	ND	0.0328	mg/kg	
1995	SW8270	S	.	0.049827	ND	0.3600	mg/kg	
1995	SW8270	S	.	0.033638	ND	0.0370	mg/kg	
1995	SW8270	S	.	0.009840	ND	0.0157	mg/kg	

N = 4

----- Site=Southeast Runway Method=Organics Analyte=Dibenz(a,h)anthracene -----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	0.0947	0.094700	DET	0.0279	mg/kg	
1995	SW8270	S	.	0.068423	ND	0.3070	mg/kg	
1995	SW8270	S	.	0.028712	ND	0.0316	mg/kg	
1995	SW8270	S	.	0.031223	ND	0.0342	mg/kg	

N = 4

a. Random uniform numbers, between zero and the lesser of the minimum result a

--------- Site=Southeast Runway Method=Organics Analyte=Dibenzofuran ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.00528	ND	0.0225	mg/kg	
1995	SW8270	S	.	0.24024	ND	0.2470	mg/kg	
1995	SW8270	S	.	0.02178	ND	0.0254	mg/kg	
1995	SW8270	S	.	0.01917	ND	0.0224	mg/kg	

N = 4

----- Site=Southeast Runway Method=Organics Analyte=Dibromochloromethane ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00027272	ND	.000840	mg/kg	
1995	SW8240	S	.	.00043215	ND	.000917	mg/kg	X
1995	SW8240	S	.	.00025434	ND	.000935	mg/kg	X
1995	SW8240	S	.	.00086185	ND	.001050	mg/kg	

N = 4

------- Site=Southeast Runway Method=Organics Analyte=Dibutyl phthalate -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.000247	ND	0.0212	mg/kg	
1995	SW8270	S	.	0.039010	ND	0.2330	mg/kg	
1995	SW8270	S	.	0.019172	ND	0.0240	mg/kg	
1995	SW8270	S	.	0.012895	ND	0.0160	mg/kg	

N = 4

----- Site=Southeast Runway Method=Organics Analyte=Diesel Range Organics -----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	AK102	S	250	250	DET	4	mg/kg	
1995	AK102	S	120	120	DET	4	mg/kg	
1995	AK102	S	110	110	DET	4	mg/kg	

a. Random uniform numbers, between zero and the lesser of the minimum result a

----- Site=Southeast Runway Method=Organics Analyte=Diesel Range Organics -----
(continued)

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	AK102	S	150	150	DET	6	mg/kg	

N = 4

------- Site=Southeast Runway Method=Organics Analyte=Diethylphthalate --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.014267	ND	0.0155	mg/kg	
1995	SW8270	S	.	0.084339	ND	0.1700	mg/kg	
1995	SW8270	S	.	0.009815	ND	0.0175	mg/kg	
1995	SW8270	S	.	0.007109	ND	0.0207	mg/kg	

N = 4

------- Site=Southeast Runway Method=Organics Analyte=Dimethylphthalate -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.00204	ND	0.0133	mg/kg	
1995	SW8270	S	.	0.13300	ND	0.1460	mg/kg	
1995	SW8270	S	.	0.00820	ND	0.0150	mg/kg	
1995	SW8270	S	.	0.01188	ND	0.0154	mg/kg	

N = 4

Site=Southeast Runway Method=Organics Analyte=Diphenylamine (N-Nitrosodiphenyla

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.01385	ND	0.0165	mg/kg	
1995	SW8270	S	.	0.16428	ND	0.1810	mg/kg	
1995	SW8270	S	.	0.01307	ND	0.0186	mg/kg	
1995	SW8270	S	.	0.02072	ND	0.0366	mg/kg	

N = 4

a. Random uniform numbers, between zero and the lesser of the minimum result a

--------- Site=Southeast Runway Method=Organics Analyte=Ethylbenzene ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00064036	ND	.000686	mg/kg	
1995	SW8240	S	.	.00072195	ND	.000749	mg/kg	X
1995	SW8240	S	.	.00007520	ND	.000764	mg/kg	X
1995	SW8240	S	.	.00028296	ND	.000855	mg/kg	

N = 4

--------- Site=Southeast Runway Method=Organics Analyte=Fluoranthene ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	0.435	0.43500	DET	0.0219	mg/kg	
1995	SW8270	S	.	0.05256	ND	0.2410	mg/kg	
1995	SW8270	S	.	0.01460	ND	0.0248	mg/kg	
1995	SW8270	S	.	0.01299	ND	0.0301	mg/kg	

N = 4

----------- Site=Southeast Runway Method=Organics Analyte=Fluorene ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.01681	ND	0.0232	mg/kg	
1995	SW8270	S	.	0.23387	ND	0.2550	mg/kg	
1995	SW8270	S	.	0.00174	ND	0.0262	mg/kg	
1995	SW8270	S	.	0.01050	ND	0.0267	mg/kg	

N = 4

---- Site=Southeast Runway Method=Organics Analyte=Gasoline Range Organics ----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	AK101	S	.	0.12553	ND	1	mg/kg	
1995	AK101	S	.	0.83061	ND	1	mg/kg	
1995	AK101	S	.	0.90495	ND	1	mg/kg	

a. Random uniform numbers, between zero and the lesser of the minimum result a

---- Site=Southeast Runway Method=Organics Analyte=Gasoline Range Organics ----
(continued)

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	AK101	S	.	0.17300	ND	1	mg/kg	

N = 4

------- Site=Southeast Runway Method=Organics Analyte=Hexachlorobenzene -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.006414	ND	0.0158	mg/kg	
1995	SW8270	S	.	0.082265	ND	0.1740	mg/kg	
1995	SW8270	S	.	0.001042	ND	0.0179	mg/kg	
1995	SW8270	S	.	0.014688	ND	0.0355	mg/kg	

N = 4

------ Site=Southeast Runway Method=Organics Analyte=Hexachlorobutadiene ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.00937	ND	0.0161	mg/kg	
1995	SW8270	S	.	0.14519	ND	0.1770	mg/kg	
1995	SW8270	S	.	0.01643	ND	0.0182	mg/kg	
1995	SW8270	S	.	0.01932	ND	0.0272	mg/kg	

N = 4

--- Site=Southeast Runway Method=Organics Analyte=Hexachlorocyclopentadiene ---

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.15636	ND	0.198	mg/kg	
1995	SW8270	S	.	0.32822	ND	2.170	mg/kg	
1995	SW8270	S	.	0.21888	ND	0.224	mg/kg	
1995	SW8270	S	.	0.07791	ND	0.146	mg/kg	

N = 4

a. Random uniform numbers, between zero and the lesser of the minimum result a

------- Site=Southeast Runway Method=Organics Analyte=Hexachloroethane --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.003730	ND	0.0137	mg/kg	
1995	SW8270	S	.	0.087403	ND	0.1510	mg/kg	
1995	SW8270	S	.	0.013766	ND	0.0155	mg/kg	
1995	SW8270	S	.	0.028957	ND	0.0382	mg/kg	

N = 4

---- Site=Southeast Runway Method=Organics Analyte=Indeno(1,2,3-cd)pyrene -----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	0.24	0.24000	DET	0.0254	mg/kg	
1995	SW8270	S	.	0.16258	ND	0.2790	mg/kg	
1995	SW8270	S	.	0.02549	ND	0.0288	mg/kg	
1995	SW8270	S	.	0.00438	ND	0.0395	mg/kg	

N = 4

---------- Site=Southeast Runway Method=Organics Analyte=Isophorone -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.004090	ND	0.0134	mg/kg	
1995	SW8270	S	.	0.056944	ND	0.1470	mg/kg	
1995	SW8270	S	.	0.007385	ND	0.0152	mg/kg	
1995	SW8270	S	.	0.009585	ND	0.0168	mg/kg	

N = 4

------ Site=Southeast Runway Method=Organics Analyte=Methylene chloride -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.000498	.000498	DET	.000946	mg/kg	BJ
1995	SW8240	S	.000484	.000484	DET	.001030	mg/kg	BJ
1995	SW8240	S	.000649	.000649	DET	.001050	mg/kg	BJ

a. Random uniform numbers, between zero and the lesser of the minimum result a

------ Site=Southeast Runway Method=Organics Analyte=Methylene chloride -------
(continued)

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.000422	.000422	DET	.00118	mg/kg	BJ

N = 4

---- Site=Southeast Runway Method=Organics Analyte=N-Nitrosodipropylamine -----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.004921	ND	0.00921	mg/kg	
1995	SW8270	S	.	0.096124	ND	0.10100	mg/kg	
1995	SW8270	S	.	0.003468	ND	0.01040	mg/kg	
1995	SW8270	S	.	0.025539	ND	0.02640	mg/kg	

N = 4

---------- Site=Southeast Runway Method=Organics Analyte=Naphthalene ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.003004	ND	0.0215	mg/kg	
1995	SW8270	S	.	0.021095	ND	0.2360	mg/kg	
1995	SW8270	S	0.0225	0.022500	DET	0.0243	mg/kg	J
1995	SW8270	S	.	0.003489	ND	0.0243	mg/kg	

N = 4

--------- Site=Southeast Runway Method=Organics Analyte=Nitrobenzene ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.007181	ND	0.0112	mg/kg	
1995	SW8270	S	.	0.028678	ND	0.1240	mg/kg	
1995	SW8270	S	.	0.011774	ND	0.0127	mg/kg	
1995	SW8270	S	.	0.012865	ND	0.0171	mg/kg	

N = 4

a. Random uniform numbers, between zero and the lesser of the minimum result a

------- Site=Southeast Runway Method=Organics Analyte=Pentachlorophenol -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.001666	ND	0.00628	mg/kg	
1995	SW8270	S	.	0.044904	ND	0.06900	mg/kg	
1995	SW8270	S	.	0.002381	ND	0.00710	mg/kg	
1995	SW8270	S	.	0.009093	ND	0.01580	mg/kg	

N = 4

--------- Site=Southeast Runway Method=Organics Analyte=Phenanthrene ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	0.149	0.14900	DET	0.0262	mg/kg	
1995	SW8270	S	.	0.13031	ND	0.2880	mg/kg	
1995	SW8270	S	.	0.02150	ND	0.0296	mg/kg	
1995	SW8270	S	.	0.01537	ND	0.0200	mg/kg	

N = 4

------------ Site=Southeast Runway Method=Organics Analyte=Phenol ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.014015	ND	0.0146	mg/kg	
1995	SW8270	S	.	0.077852	ND	0.1600	mg/kg	
1995	SW8270	S	.	0.016294	ND	0.0165	mg/kg	
1995	SW8270	S	.	0.032867	ND	0.0351	mg/kg	

N = 4

------------ Site=Southeast Runway Method=Organics Analyte=Pyrene ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	0.517	0.51700	DET	0.0268	mg/kg	
1995	SW8270	S	.	0.08377	ND	0.2950	mg/kg	
1995	SW8270	S	.	0.02023	ND	0.0303	mg/kg	

a. Random uniform numbers, between zero and the lesser of the minimum result a

----------- Site=Southeast Runway Method=Organics Analyte=Pyrene -------------
(continued)

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	.0056135	ND	0.0276	mg/kg	

N = 4

----------- Site=Southeast Runway Method=Organics Analyte=Styrene ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00033264	ND	.000916	mg/kg	
1995	SW8240	S	.	.00094750	ND	.001000	mg/kg	X
1995	SW8240	S	.	.00022562	ND	.001020	mg/kg	X
1995	SW8240	S	.	.00063606	ND	.001140	mg/kg	

N = 4

------- Site=Southeast Runway Method=Organics Analyte=Tetrachloroethene -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.0002067	ND	.00108	mg/kg	
1995	SW8240	S	.	.0003857	ND	.00118	mg/kg	X
1995	SW8240	S	.	.0011547	ND	.00120	mg/kg	X
1995	SW8240	S	.	.0003947	ND	.00134	mg/kg	

N = 4

----------- Site=Southeast Runway Method=Organics Analyte=Toluene -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00063903	ND	.000783	mg/kg	
1995	SW8240	S	.	.00055281	ND	.000855	mg/kg	
1995	SW8240	S	.	.00013689	ND	.000872	mg/kg	
1995	SW8240	S	.	.00090878	ND	.000976	mg/kg	

N = 4

a. Random uniform numbers, between zero and the lesser of the minimum result a

-- Site=Southeast Runway Method=Organics Analyte=Tribromomethane(Bromoform) ---

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00024361	ND	.000658	mg/kg	
1995	SW8240	S	.	.00048645	ND	.000718	mg/kg	X
1995	SW8240	S	.	.00063622	ND	.000732	mg/kg	X
1995	SW8240	S	.	.00008311	ND	.000820	mg/kg	

N = 4

-------- Site=Southeast Runway Method=Organics Analyte=Trichloroethene --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00000815	ND	.000787	mg/kg	
1995	SW8240	S	.	.00082179	ND	.000858	mg/kg	
1995	SW8240	S	.	.00007290	ND	.000876	mg/kg	
1995	SW8240	S	.	.00029184	ND	.000980	mg/kg	

N = 4

--------- Site=Southeast Runway Method=Organics Analyte=Vinyl acetate ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00003644	ND	.000911	mg/kg	
1995	SW8240	S	.	.00004791	ND	.000994	mg/kg	
1995	SW8240	S	.	.00071041	ND	.001010	mg/kg	
1995	SW8240	S	.	.00067389	ND	.001130	mg/kg	

N = 4

-------- Site=Southeast Runway Method=Organics Analyte=Vinyl chloride ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00050630	ND	.000759	mg/kg	
1995	SW8240	S	.	.00044317	ND	.000829	mg/kg	
1995	SW8240	S	.	.00059558	ND	.000845	mg/kg	

a. Random uniform numbers, between zero and the lesser of the minimum result a

-------- Site=Southeast Runway Method=Organics Analyte=Vinyl chloride ---------
(continued)

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00045570	ND	.000946	mg/kg	

N = 4

-- Site=Southeast Runway Method=Organics Analyte=bis(2-Chloroethoxy)methane ---

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.002814	ND	0.0146	mg/kg	
1995	SW8270	S	.	0.076857	ND	0.1600	mg/kg	
1995	SW8270	S	.	0.013032	ND	0.0165	mg/kg	
1995	SW8270	S	.	0.008769	ND	0.0121	mg/kg	

N = 4

---- Site=Southeast Runway Method=Organics Analyte=bis(2-Chloroethyl)ether ----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.002639	ND	0.0146	mg/kg	
1995	SW8270	S	.	0.014086	ND	0.1600	mg/kg	
1995	SW8270	S	.	0.012781	ND	0.0165	mg/kg	
1995	SW8270	S	.	0.012222	ND	0.0189	mg/kg	

N = 4

-- Site=Southeast Runway Method=Organics Analyte=bis(2-Chloroisopropyl)ether --

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.00654	ND	0.0152	mg/kg	
1995	SW8270	S	.	0.14326	ND	0.1670	mg/kg	
1995	SW8270	S	.	0.00263	ND	0.0172	mg/kg	
1995	SW8270	S	.	0.00209	ND	0.0180	mg/kg	

N = 4

a. Random uniform numbers, between zero and the lesser of the minimum result a

-- Site=Southeast Runway Method=Organics Analyte=bis(2-Ethylhexyl)phthalate ---

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	0.0349	0.03490	DET	0.0247	mg/kg	
1995	SW8270	S	.	0.00314	ND	0.2720	mg/kg	
1995	SW8270	S	.	0.00061	ND	0.0280	mg/kg	
1995	SW8270	S	0.2850	0.28500	DET	0.0170	mg/kg	

N = 4

---- Site=Southeast Runway Method=Organics Analyte=cis-1,2-Dichloroethene -----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00008218	ND	.000943	mg/kg	
1995	SW8240	S	.	.00000283	ND	.001030	mg/kg	
1995	SW8240	S	.	.00067844	ND	.001050	mg/kg	
1995	SW8240	S	.	.00054836	ND	.001180	mg/kg	

N = 4

---- Site=Southeast Runway Method=Organics Analyte=cis-1,3-Dichloropropene ----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00015220	ND	.000673	mg/kg	
1995	SW8240	S	.	.00048149	ND	.000735	mg/kg	
1995	SW8240	S	.	.00010746	ND	.000749	mg/kg	
1995	SW8240	S	.	.00074551	ND	.000839	mg/kg	

N = 4

---------- Site=Southeast Runway Method=Organics Analyte=m&p-Xylenes ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00072713	ND	.00162	mg/kg	
1995	SW8240	S	.	.00047928	ND	.00177	mg/kg	X
1995	SW8240	S	.	.00015908	ND	.00181	mg/kg	X

a. Random uniform numbers, between zero and the lesser of the minimum result a

---------- Site=Southeast Runway Method=Organics Analyte=m&p-Xylenes ----------
(continued)

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00027713	ND	.00202	mg/kg	

N = 4

----------- Site=Southeast Runway Method=Organics Analyte=o-Xylene -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00007551	ND	.000735	mg/kg	
1995	SW8240	S	.	.00057848	ND	.000803	mg/kg	X
1995	SW8240	S	.	.00026081	ND	.000819	mg/kg	X
1995	SW8240	S	.	.00065898	ND	.000916	mg/kg	

N = 4

--- Site=Southeast Runway Method=Organics Analyte=trans-1,2-Dichloroethene ----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00070537	ND	.00114	mg/kg	
1995	SW8240	S	.	.00021826	ND	.00125	mg/kg	
1995	SW8240	S	.	.00061685	ND	.00127	mg/kg	
1995	SW8240	S	.	.00042044	ND	.00143	mg/kg	

N = 4

--- Site=Southeast Runway Method=Organics Analyte=trans-1,3-Dichloropropene ---

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00026928	ND	.000634	mg/kg	
1995	SW8240	S	.	.00038717	ND	.000692	mg/kg	
1995	SW8240	S	.	.00014775	ND	.000706	mg/kg	
1995	SW8240	S	.	.00018008	ND	.000790	mg/kg	

N = 4

a. Random uniform numbers, between zero and the lesser of the minimum result a

Subsurface Soil Raw Data

------------ Site=Southeast Runway Method=Inorganics Analyte=Lead ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW7421	S	3.36	3.36	DET	0.0780	mg/kg	S
1995	SW7421	S	2.90	2.90	DET	0.0703	mg/kg	S
1995	SW7421	S	3.28	3.28	DET	0.0701	mg/kg	S
1995	SW7421	S	7.32	7.32	DET	0.2720	mg/kg	
1995	SW7421	S	3.52	3.52	DET	0.0717	mg/kg	
1995	SW7421	S	5.96	5.96	DET	0.2610	mg/kg	

N = 6

----- Site=Southeast Runway Method=Organics Analyte=1,1,1-Trichloroethane -----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.0000380	ND	.000981	mg/kg	
1995	SW8240	S	.	.0006670	ND	.000788	mg/kg	
1995	SW8240	S	.	.0001078	ND	.000819	mg/kg	
1995	SW8240	S	.	.0041964	ND	.004520	mg/kg	
1995	SW8240	S	.	.0007382	ND	.000815	mg/kg	
1995	SW8240	S	.	.0009494	ND	.001870	mg/kg	

N = 6

--- Site=Southeast Runway Method=Organics Analyte=1,1,2,2-Tetrachloroethane ---

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.0001990	ND	.00140	mg/kg	
1995	SW8240	S	.	.0003017	ND	.00112	mg/kg	
1995	SW8240	S	.	.0000612	ND	.00117	mg/kg	
1995	SW8240	S	.	.0040855	ND	.00644	mg/kg	
1995	SW8240	S	.	.0008454	ND	.00116	mg/kg	
1995	SW8240	S	.	.0016154	ND	.00267	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

----- Site=Southeast Runway Method=Organics Analyte=1,1,2-Trichloroethane -----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.0008591	ND	.001010	mg/kg	
1995	SW8240	S	.	.0005691	ND	.000813	mg/kg	
1995	SW8240	S	.	.0000144	ND	.000845	mg/kg	
1995	SW8240	S	.	.0023087	ND	.004660	mg/kg	
1995	SW8240	S	.	.0007425	ND	.000841	mg/kg	
1995	SW8240	S	.	.0001706	ND	.001930	mg/kg	

N = 6

------ Site=Southeast Runway Method=Organics Analyte=1,1-Dichloroethane -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.0004852	ND	.00133	mg/kg	
1995	SW8240	S	.	.0008420	ND	.00107	mg/kg	
1995	SW8240	S	.	.0000402	ND	.00111	mg/kg	
1995	SW8240	S	.	.0055499	ND	.00614	mg/kg	
1995	SW8240	S	.	.0004542	ND	.00111	mg/kg	
1995	SW8240	S	.	.0009745	ND	.00255	mg/kg	

N = 6

------ Site=Southeast Runway Method=Organics Analyte=1,1-Dichloroethene -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.0005712	ND	.000933	mg/kg	
1995	SW8240	S	.	.0006230	ND	.000750	mg/kg	
1995	SW8240	S	.	.0006201	ND	.000780	mg/kg	
1995	SW8240	S	.	.0001042	ND	.004300	mg/kg	
1995	SW8240	S	.	.0000410	ND	.000776	mg/kg	
1995	SW8240	S	.	.0011529	ND	.001780	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

---- Site=Southeast Runway Method=Organics Analyte=1,2,4-Trichlorobenzene -----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.00373	ND	0.0196	mg/kg	
1995	SW8270	S	.	0.01010	ND	0.0158	mg/kg	
1995	SW8270	S	.	0.00400	ND	0.0164	mg/kg	
1995	SW8270	S	.	0.50618	ND	9.9700	mg/kg	
1995	SW8270	S	.	0.00515	ND	0.0151	mg/kg	
1995	SW8270	S	.	0.00703	ND	0.0497	mg/kg	

N = 6

------ Site=Southeast Runway Method=Organics Analyte=1,2-Dichlorobenzene ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.00387	ND	0.0113	mg/kg	
1995	SW8270	S	.	0.00875	ND	0.0091	mg/kg	
1995	SW8270	S	.	0.00369	ND	0.0095	mg/kg	
1995	SW8270	S	.	0.72413	ND	10.4000	mg/kg	
1995	SW8270	S	.	0.00342	ND	0.0157	mg/kg	
1995	SW8270	S	.	0.02770	ND	0.0516	mg/kg	

N = 6

------ Site=Southeast Runway Method=Organics Analyte=1,2-Dichloroethane -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.0000302	ND	.000964	mg/kg	
1995	SW8240	S	.	.0004278	ND	.000775	mg/kg	
1995	SW8240	S	.	.0006903	ND	.000805	mg/kg	
1995	SW8240	S	.	.0036894	ND	.004440	mg/kg	
1995	SW8240	S	.	.0006478	ND	.000801	mg/kg	
1995	SW8240	S	.	.0001461	ND	.001840	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

------ Site=Southeast Runway Method=Organics Analyte=1,2-Dichloropropane ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.0006685	ND	.000752	mg/kg	
1995	SW8240	S	.	.0001863	ND	.000605	mg/kg	
1995	SW8240	S	.	.0004210	ND	.000629	mg/kg	
1995	SW8240	S	.	.0029227	ND	.003470	mg/kg	
1995	SW8240	S	.	.0001906	ND	.000625	mg/kg	
1995	SW8240	S	.	.0009971	ND	.001440	mg/kg	

N = 6

------ Site=Southeast Runway Method=Organics Analyte=1,3-Dichlorobenzene ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.01232	ND	0.0127	mg/kg	
1995	SW8270	S	.	0.00608	ND	0.0102	mg/kg	
1995	SW8270	S	.	0.00337	ND	0.0106	mg/kg	
1995	SW8270	S	.	0.61411	ND	10.3000	mg/kg	
1995	SW8270	S	.	0.01392	ND	0.0156	mg/kg	
1995	SW8270	S	.	0.00031	ND	0.0514	mg/kg	

N = 6

------ Site=Southeast Runway Method=Organics Analyte=1,4-Dichlorobenzene ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.0033	ND	0.0151	mg/kg	
1995	SW8270	S	.	0.0109	ND	0.0122	mg/kg	
1995	SW8270	S	.	0.0032	ND	0.0126	mg/kg	
1995	SW8270	S	.	14.1131	ND	14.7000	mg/kg	
1995	SW8270	S	.	0.0209	ND	0.0222	mg/kg	
1995	SW8270	S	.	0.0078	ND	0.0732	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

----- Site=Southeast Runway Method=Organics Analyte=2,4,5-Trichlorophenol -----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.01524	ND	0.0195	mg/kg	
1995	SW8270	S	.	0.00346	ND	0.0157	mg/kg	
1995	SW8270	S	.	0.01241	ND	0.0163	mg/kg	
1995	SW8270	S	.	3.46076	ND	7.2800	mg/kg	
1995	SW8270	S	.	0.00339	ND	0.0110	mg/kg	
1995	SW8270	S	.	0.00795	ND	0.0363	mg/kg	

N = 6

----- Site=Southeast Runway Method=Organics Analyte=2,4,6-Trichlorophenol -----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.00842	ND	0.0138	mg/kg	
1995	SW8270	S	.	0.00640	ND	0.0112	mg/kg	
1995	SW8270	S	.	0.00648	ND	0.0116	mg/kg	X
1995	SW8270	S	.	4.56806	ND	16.2000	mg/kg	
1995	SW8270	S	.	0.01477	ND	0.0245	mg/kg	
1995	SW8270	S	.	0.03544	ND	0.0808	mg/kg	

N = 6

------ Site=Southeast Runway Method=Organics Analyte=2,4-Dichlorophenol ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.01297	ND	0.01560	mg/kg	
1995	SW8270	S	.	0.00846	ND	0.01250	mg/kg	
1995	SW8270	S	.	0.00426	ND	0.01300	mg/kg	
1995	SW8270	S	.	4.96346	ND	5.65000	mg/kg	
1995	SW8270	S	.	0.00199	ND	0.00855	mg/kg	
1995	SW8270	S	.	0.00474	ND	0.02820	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

------ Site=Southeast Runway Method=Organics Analyte=2,4-Dimethylphenol -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.0138	ND	0.0344	mg/kg	
1995	SW8270	S	.	0.0062	ND	0.0277	mg/kg	
1995	SW8270	S	.	0.0157	ND	0.0288	mg/kg	
1995	SW8270	S	.	12.8255	ND	15.5000	mg/kg	
1995	SW8270	S	.	0.0130	ND	0.0235	mg/kg	
1995	SW8270	S	.	0.0222	ND	0.0773	mg/kg	

N = 6

------- Site=Southeast Runway Method=Organics Analyte=2,4-Dinitrophenol -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.0015	ND	0.0583	mg/kg	
1995	SW8270	S	.	0.0391	ND	0.0470	mg/kg	
1995	SW8270	S	.	0.0351	ND	0.0488	mg/kg	
1995	SW8270	S	.	18.0890	ND	30.1000	mg/kg	
1995	SW8270	S	.	0.0320	ND	0.0455	mg/kg	
1995	SW8270	S	.	0.0618	ND	0.1500	mg/kg	

N = 6

------ Site=Southeast Runway Method=Organics Analyte=2,4-Dinitrotoluene -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.00225	ND	0.0255	mg/kg	
1995	SW8270	S	.	0.01609	ND	0.0206	mg/kg	
1995	SW8270	S	.	0.02020	ND	0.0214	mg/kg	
1995	SW8270	S	.	2.64429	ND	9.1600	mg/kg	
1995	SW8270	S	.	0.01140	ND	0.0139	mg/kg	
1995	SW8270	S	.	0.02731	ND	0.0457	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

------ Site=Southeast Runway Method=Organics Analyte=2,6-Dinitrotoluene -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.01569	ND	0.0204	mg/kg	
1995	SW8270	S	.	0.00467	ND	0.0164	mg/kg	
1995	SW8270	S	.	0.00131	ND	0.0171	mg/kg	
1995	SW8270	S	.	2.53405	ND	19.8000	mg/kg	
1995	SW8270	S	.	0.02629	ND	0.0299	mg/kg	
1995	SW8270	S	.	0.02096	ND	0.0986	mg/kg	

N = 6

-------- Site=Southeast Runway Method=Organics Analyte=2-Butanone(MEK) --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	0.001706	ND	0.00468	mg/kg	
1995	SW8240	S	.	0.003737	ND	0.00376	mg/kg	
1995	SW8240	S	.	0.001195	ND	0.00391	mg/kg	
1995	SW8240	S	0.0609	0.060900	DET	0.02160	mg/kg	F
1995	SW8240	S	0.0181	0.018100	DET	0.00389	mg/kg	
1995	SW8240	S	.	0.007884	ND	0.00894	mg/kg	

N = 6

--- Site=Southeast Runway Method=Organics Analyte=2-Chloroethyl vinyl ether ---

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.0001267	ND	.001080	mg/kg	
1995	SW8240	S	.	.0006157	ND	.000868	mg/kg	
1995	SW8240	S	.	.0003539	ND	.000902	mg/kg	
1995	SW8240	S	.	.0038380	ND	.004970	mg/kg	
1995	SW8240	S	.	.0004970	ND	.000897	mg/kg	
1995	SW8240	S	.	.0009822	ND	.002060	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

------ Site=Southeast Runway Method=Organics Analyte=2-Chloronaphthalene ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.00211	ND	0.0353	mg/kg	
1995	SW8270	S	.	0.02348	ND	0.0284	mg/kg	
1995	SW8270	S	.	0.02880	ND	0.0295	mg/kg	
1995	SW8270	S	.	3.53337	ND	12.2000	mg/kg	
1995	SW8270	S	.	0.01410	ND	0.0184	mg/kg	
1995	SW8270	S	.	0.01568	ND	0.0607	mg/kg	

N = 6

-------- Site=Southeast Runway Method=Organics Analyte=2-Chlorophenol ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.00632	ND	0.0131	mg/kg	
1995	SW8270	S	.	0.00869	ND	0.0105	mg/kg	
1995	SW8270	S	.	0.00415	ND	0.0110	mg/kg	
1995	SW8270	S	.	1.38567	ND	10.7000	mg/kg	
1995	SW8270	S	.	0.01367	ND	0.0162	mg/kg	
1995	SW8270	S	.	0.05141	ND	0.0534	mg/kg	

N = 6

---------- Site=Southeast Runway Method=Organics Analyte=2-Hexanone -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.0026856	ND	0.00320	mg/kg	
1995	SW8240	S	.	.0022717	ND	0.00258	mg/kg	
1995	SW8240	S	.	.0022437	ND	0.00268	mg/kg	
1995	SW8240	S	.	.0057144	ND	0.01480	mg/kg	
1995	SW8240	S	.	.0003168	ND	0.00266	mg/kg	
1995	SW8240	S	.	.0056922	ND	0.00612	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

------ Site=Southeast Runway Method=Organics Analyte=2-Methylnaphthalene ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.018	ND	0.0248	mg/kg	
1995	SW8270	S	.	0.016	ND	0.0200	mg/kg	
1995	SW8270	S	.	0.004	ND	0.0208	mg/kg	
1995	SW8270	S	235.000	235.000	DET	15.7000	mg/kg	
1995	SW8270	S	0.027	0.027	DET	0.0238	mg/kg	
1995	SW8270	S	13.200	13.200	DET	0.0784	mg/kg	

N = 6

--- Site=Southeast Runway Method=Organics Analyte=2-Methylphenol(o-cresol) ----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.00180	ND	0.00977	mg/kg	
1995	SW8270	S	.	0.00292	ND	0.00787	mg/kg	
1995	SW8270	S	.	0.00568	ND	0.00818	mg/kg	
1995	SW8270	S	.	4.59251	ND	7.06000	mg/kg	
1995	SW8270	S	.	0.00745	ND	0.01070	mg/kg	
1995	SW8270	S	.	0.01561	ND	0.03520	mg/kg	

N = 6

-------- Site=Southeast Runway Method=Organics Analyte=2-Nitroaniline ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.00162	ND	0.02320	mg/kg	
1995	SW8270	S	.	0.01009	ND	0.01870	mg/kg	
1995	SW8270	S	.	0.01876	ND	0.01940	mg/kg	
1995	SW8270	S	.	4.08886	ND	4.13000	mg/kg	
1995	SW8270	S	.	0.00301	ND	0.00624	mg/kg	
1995	SW8270	S	.	0.00735	ND	0.02060	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

--------- Site=Southeast Runway Method=Organics Analyte=2-Nitrophenol ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.02647	ND	0.0329	mg/kg	
1995	SW8270	S	.	0.00513	ND	0.0265	mg/kg	
1995	SW8270	S	.	0.01386	ND	0.0275	mg/kg	
1995	SW8270	S	.	0.77920	ND	11.8000	mg/kg	
1995	SW8270	S	.	0.00110	ND	0.0178	mg/kg	
1995	SW8270	S	.	0.05615	ND	0.0586	mg/kg	

N = 6

---- Site=Southeast Runway Method=Organics Analyte=3,3'-Dichlorobenzidine -----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.02173	ND	0.0280	mg/kg	
1995	SW8270	S	.	0.01984	ND	0.0226	mg/kg	
1995	SW8270	S	.	0.00172	ND	0.0235	mg/kg	
1995	SW8270	S	.	3.79664	ND	7.1800	mg/kg	
1995	SW8270	S	.	0.00103	ND	0.0109	mg/kg	
1995	SW8270	S	.	0.02252	ND	0.0358	mg/kg	

N = 6

-------- Site=Southeast Runway Method=Organics Analyte=3-Nitroaniline ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.00130	ND	0.01160	mg/kg	
1995	SW8270	S	.	0.00279	ND	0.00936	mg/kg	
1995	SW8270	S	.	0.00665	ND	0.00973	mg/kg	
1995	SW8270	S	.	5.38572	ND	9.99000	mg/kg	
1995	SW8270	S	.	0.01403	ND	0.01510	mg/kg	
1995	SW8270	S	.	0.04408	ND	0.04980	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

-- Site=Southeast Runway Method=Organics Analyte=4,6-Dinitro-2-methylphenol ---

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.0106	ND	0.0155	mg/kg	
1995	SW8270	S	.	0.0013	ND	0.0125	mg/kg	
1995	SW8270	S	.	0.0120	ND	0.0130	mg/kg	
1995	SW8270	S	.	34.5352	ND	92.3000	mg/kg	
1995	SW8270	S	.	0.0856	ND	0.1400	mg/kg	
1995	SW8270	S	.	0.3431	ND	0.4600	mg/kg	

N = 6

-- Site=Southeast Runway Method=Organics Analyte=4-Bromophenyl phenyl ether ---

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.01147	ND	0.0180	mg/kg	
1995	SW8270	S	.	0.00127	ND	0.0145	mg/kg	
1995	SW8270	S	.	0.00909	ND	0.0150	mg/kg	
1995	SW8270	S	.	2.54686	ND	8.6600	mg/kg	
1995	SW8270	S	.	0.01141	ND	0.0131	mg/kg	
1995	SW8270	S	.	0.03543	ND	0.0432	mg/kg	

N = 6

---- Site=Southeast Runway Method=Organics Analyte=4-Chloro-3-methylphenol ----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.01928	ND	0.02780	mg/kg	
1995	SW8270	S	.	0.01240	ND	0.02240	mg/kg	
1995	SW8270	S	.	0.00888	ND	0.02330	mg/kg	
1995	SW8270	S	.	2.26962	ND	4.34000	mg/kg	
1995	SW8270	S	.	0.00429	ND	0.00657	mg/kg	
1995	SW8270	S	.	0.00201	ND	0.02160	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

-------- Site=Southeast Runway Method=Organics Analyte=4-Chloroaniline --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.01151	ND	0.0313	mg/kg	
1995	SW8270	S	.	0.01393	ND	0.0252	mg/kg	
1995	SW8270	S	.	0.00662	ND	0.0262	mg/kg	
1995	SW8270	S	.	7.65935	ND	9.9700	mg/kg	
1995	SW8270	S	.	0.01316	ND	0.0151	mg/kg	
1995	SW8270	S	.	0.04314	ND	0.0497	mg/kg	

N = 6

-- Site=Southeast Runway Method=Organics Analyte=4-Chlorophenyl phenyl ether --

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.00842	ND	0.0087	mg/kg	
1995	SW8270	S	.	0.00106	ND	0.0070	mg/kg	
1995	SW8270	S	.	0.00183	ND	0.0073	mg/kg	
1995	SW8270	S	.	2.33710	ND	15.1000	mg/kg	
1995	SW8270	S	.	0.00380	ND	0.0229	mg/kg	
1995	SW8270	S	.	0.06444	ND	0.0754	mg/kg	

N = 6

-- Site=Southeast Runway Method=Organics Analyte=4-Methyl-2-pentanone(MIBK) ---

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.0016584	ND	0.00285	mg/kg	
1995	SW8240	S	.	.0002243	ND	0.00229	mg/kg	
1995	SW8240	S	.	.0002839	ND	0.00238	mg/kg	
1995	SW8240	S	.	.0098988	ND	0.01310	mg/kg	
1995	SW8240	S	.	.0023177	ND	0.00237	mg/kg	
1995	SW8240	S	.	.0031027	ND	0.00543	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

- Site=Southeast Runway Method=Organics Analyte=4-Methylphenol/3-Methylphenol -

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.01618	ND	0.0208	mg/kg	
1995	SW8270	S	.	0.01670	ND	0.0168	mg/kg	
1995	SW8270	S	.	0.00044	ND	0.0174	mg/kg	
1995	SW8270	S	.	3.64885	ND	9.5700	mg/kg	
1995	SW8270	S	.	0.01429	ND	0.0145	mg/kg	
1995	SW8270	S	.	0.02336	ND	0.0477	mg/kg	

N = 6

-------- Site=Southeast Runway Method=Organics Analyte=4-Nitroaniline ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.01088	ND	0.0256	mg/kg	
1995	SW8270	S	.	0.01445	ND	0.0207	mg/kg	
1995	SW8270	S	.	0.01592	ND	0.0215	mg/kg	
1995	SW8270	S	.	6.17652	ND	9.8300	mg/kg	
1995	SW8270	S	.	0.01020	ND	0.0149	mg/kg	
1995	SW8270	S	.	0.01863	ND	0.0490	mg/kg	

N = 6

--------- Site=Southeast Runway Method=Organics Analyte=4-Nitrophenol ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.04332	ND	0.0501	mg/kg	
1995	SW8270	S	.	0.00811	ND	0.0404	mg/kg	
1995	SW8270	S	.	0.02350	ND	0.0420	mg/kg	
1995	SW8270	S	.	0.88091	ND	10.2000	mg/kg	
1995	SW8270	S	.	0.00254	ND	0.0155	mg/kg	
1995	SW8270	S	.	0.00066	ND	0.0510	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

--------- Site=Southeast Runway Method=Organics Analyte=Acenaphthene ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.02467	ND	0.0281	mg/kg	
1995	SW8270	S	.	0.01804	ND	0.0227	mg/kg	
1995	SW8270	S	.	0.01380	ND	0.0236	mg/kg	
1995	SW8270	S	.	0.16303	ND	10.3000	mg/kg	
1995	SW8270	S	.	0.01407	ND	0.0156	mg/kg	
1995	SW8270	S	0.225	0.22500	DET	0.0515	mg/kg	

N = 6

-------- Site=Southeast Runway Method=Organics Analyte=Acenaphthylene ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.00996	ND	0.0200	mg/kg	
1995	SW8270	S	.	0.01361	ND	0.0161	mg/kg	
1995	SW8270	S	.	0.00074	ND	0.0167	mg/kg	
1995	SW8270	S	.	8.42780	ND	9.2600	mg/kg	
1995	SW8270	S	.	0.00031	ND	0.0140	mg/kg	
1995	SW8270	S	.	0.00850	ND	0.0462	mg/kg	

N = 6

------------ Site=Southeast Runway Method=Organics Analyte=Acetone ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	0.00143	ND	0.00596	mg/kg	
1995	SW8240	S	.	0.00048	ND	0.00479	mg/kg	
1995	SW8240	S	0.00315	0.00315	DET	0.00498	mg/kg	J
1995	SW8240	S	0.17500	0.17500	DET	0.02750	mg/kg	
1995	SW8240	S	0.09440	0.09440	DET	0.00495	mg/kg	
1995	SW8240	S	0.03080	0.03080	DET	0.01140	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

---------- Site=Southeast Runway Method=Organics Analyte=Anthracene -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.01520	ND	0.0270	mg/kg	
1995	SW8270	S	.	0.00425	ND	0.0218	mg/kg	
1995	SW8270	S	.	0.01227	ND	0.0227	mg/kg	
1995	SW8270	S	.	3.55557	ND	12.5000	mg/kg	
1995	SW8270	S	.	0.01767	ND	0.0188	mg/kg	
1995	SW8270	S	.	0.05658	ND	0.0621	mg/kg	

N = 6

----------- Site=Southeast Runway Method=Organics Analyte=Benzene -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	0.00023	ND	.001070	mg/kg	
1995	SW8240	S	.	0.00008	ND	.000861	mg/kg	
1995	SW8240	S	.	0.00008	ND	.000894	mg/kg	
1995	SW8240	S	0.336	0.33600	DET	.004930	mg/kg	
1995	SW8240	S	.	0.00020	ND	.000890	mg/kg	
1995	SW8240	S	.	0.00105	ND	.002040	mg/kg	

N = 6

------ Site=Southeast Runway Method=Organics Analyte=Benzo(a)anthracene -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.0224	ND	0.0264	mg/kg	
1995	SW8270	S	.	0.0037	ND	0.0213	mg/kg	
1995	SW8270	S	.	0.0099	ND	0.0222	mg/kg	
1995	SW8270	S	.	11.7692	ND	13.7000	mg/kg	
1995	SW8270	S	.	0.0067	ND	0.0207	mg/kg	
1995	SW8270	S	.	0.0676	ND	0.0682	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

-------- Site=Southeast Runway Method=Organics Analyte=Benzo(a)pyrene ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.0030	ND	0.0217	mg/kg	
1995	SW8270	S	.	0.0097	ND	0.0175	mg/kg	
1995	SW8270	S	.	0.0137	ND	0.0182	mg/kg	
1995	SW8270	S	.	10.9488	ND	14.3000	mg/kg	
1995	SW8270	S	.	0.0175	ND	0.0217	mg/kg	
1995	SW8270	S	.	0.0041	ND	0.0715	mg/kg	

N = 6

----- Site=Southeast Runway Method=Organics Analyte=Benzo(b)fluoranthene ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.04708	ND	0.0476	mg/kg	
1995	SW8270	S	.	0.02083	ND	0.0383	mg/kg	
1995	SW8270	S	.	0.00552	ND	0.0399	mg/kg	
1995	SW8270	S	.	7.00672	ND	12.9000	mg/kg	
1995	SW8270	S	.	0.00290	ND	0.0195	mg/kg	
1995	SW8270	S	.	0.01960	ND	0.0641	mg/kg	

N = 6

----- Site=Southeast Runway Method=Organics Analyte=Benzo(g,h,i)perylene -----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.01180	ND	0.0271	mg/kg	
1995	SW8270	S	.	0.01426	ND	0.0218	mg/kg	
1995	SW8270	S	.	0.01083	ND	0.0227	mg/kg	
1995	SW8270	S	.	8.48759	ND	17.7000	mg/kg	
1995	SW8270	S	.	0.00307	ND	0.0269	mg/kg	
1995	SW8270	S	.	0.03979	ND	0.0885	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

----- Site=Southeast Runway Method=Organics Analyte=Benzo(k)fluoranthene ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.00754	ND	0.0767	mg/kg	
1995	SW8270	S	.	0.00354	ND	0.0618	mg/kg	
1995	SW8270	S	.	0.03509	ND	0.0643	mg/kg	
1995	SW8270	S	.	9.34825	ND	22.4000	mg/kg	
1995	SW8270	S	.	0.03101	ND	0.0339	mg/kg	
1995	SW8270	S	.	0.06262	ND	0.1120	mg/kg	

N = 6

--------- Site=Southeast Runway Method=Organics Analyte=Benzoic acid ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.005	ND	0.277	mg/kg	
1995	SW8270	S	.	0.020	ND	0.223	mg/kg	
1995	SW8270	S	.	0.041	ND	0.232	mg/kg	
1995	SW8270	S	.	140.917	ND	144.000	mg/kg	
1995	SW8270	S	.	0.129	ND	0.218	mg/kg	
1995	SW8270	S	.	0.175	ND	0.717	mg/kg	

N = 6

-------- Site=Southeast Runway Method=Organics Analyte=Benzyl alcohol ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.0020	ND	0.0266	mg/kg	
1995	SW8270	S	.	0.0201	ND	0.0214	mg/kg	
1995	SW8270	S	.	0.0193	ND	0.0223	mg/kg	
1995	SW8270	S	.	12.3978	ND	26.5000	mg/kg	
1995	SW8270	S	.	0.0269	ND	0.0401	mg/kg	
1995	SW8270	S	.	0.0808	ND	0.1320	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

----- Site=Southeast Runway Method=Organics Analyte=Bromodichloromethane ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.0005319	ND	.000965	mg/kg	
1995	SW8240	S	.	.0004593	ND	.000776	mg/kg	
1995	SW8240	S	.	.0004259	ND	.000806	mg/kg	
1995	SW8240	S	.	.0030083	ND	.004450	mg/kg	
1995	SW8240	S	.	.0005807	ND	.000802	mg/kg	
1995	SW8240	S	.	.0008585	ND	.001840	mg/kg	

N = 6

--------- Site=Southeast Runway Method=Organics Analyte=Bromomethane ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.0007872	ND	.00132	mg/kg	
1995	SW8240	S	.	.0009957	ND	.00106	mg/kg	
1995	SW8240	S	.	.0004850	ND	.00110	mg/kg	
1995	SW8240	S	.	.0023639	ND	.00608	mg/kg	
1995	SW8240	S	.	.0008713	ND	.00110	mg/kg	
1995	SW8240	S	.	.0004915	ND	.00252	mg/kg	

N = 6

----- Site=Southeast Runway Method=Organics Analyte=Butylbenzylphthalate ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.0011	ND	0.0098	mg/kg	
1995	SW8270	S	.	0.0022	ND	0.0079	mg/kg	
1995	SW8270	S	.	0.0033	ND	0.0082	mg/kg	
1995	SW8270	S	.	13.0985	ND	15.1000	mg/kg	
1995	SW8270	S	.	0.0189	ND	0.0228	mg/kg	
1995	SW8270	S	.	0.0038	ND	0.0753	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

------ Site=Southeast Runway Method=Organics Analyte=Carbon disulfide --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00058890	ND	.000931	mg/kg	
1995	SW8240	S	.	.00065888	ND	.000748	mg/kg	
1995	SW8240	S	.	.00005179	ND	.000778	mg/kg	
1995	SW8240	S	.	.00030596	ND	.004290	mg/kg	
1995	SW8240	S	.	.00046447	ND	.000773	mg/kg	
1995	SW8240	S	.	.00018619	ND	.001780	mg/kg	

N = 6

----- Site=Southeast Runway Method=Organics Analyte=Carbon tetrachloride ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.0001715	ND	.001050	mg/kg	
1995	SW8240	S	.	.0005462	ND	.000846	mg/kg	
1995	SW8240	S	.	.0005307	ND	.000879	mg/kg	
1995	SW8240	S	.	.0013167	ND	.004850	mg/kg	
1995	SW8240	S	.	.0008240	ND	.000875	mg/kg	
1995	SW8240	S	.	.0006808	ND	.002010	mg/kg	

N = 6

--------- Site=Southeast Runway Method=Organics Analyte=Chlorobenzene ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.0008675	ND	.000956	mg/kg	
1995	SW8240	S	.	.0004174	ND	.000769	mg/kg	
1995	SW8240	S	.	.0001617	ND	.000799	mg/kg	
1995	SW8240	S	.	.0033067	ND	.004410	mg/kg	
1995	SW8240	S	.	.0007424	ND	.000795	mg/kg	
1995	SW8240	S	.	.0000382	ND	.001830	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

--------- Site=Southeast Runway Method=Organics Analyte=Chloroethane ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.0003163	ND	.00133	mg/kg	
1995	SW8240	S	.	.0004427	ND	.00107	mg/kg	
1995	SW8240	S	.	.0004435	ND	.00111	mg/kg	
1995	SW8240	S	.	.0031341	ND	.00614	mg/kg	
1995	SW8240	S	.	.0003570	ND	.00111	mg/kg	
1995	SW8240	S	.	.0024888	ND	.00255	mg/kg	

N = 6

--------- Site=Southeast Runway Method=Organics Analyte=Chloroform -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.0006089	ND	.00129	mg/kg	
1995	SW8240	S	.	.0009108	ND	.00104	mg/kg	
1995	SW8240	S	.	.0007679	ND	.00108	mg/kg	
1995	SW8240	S	.	.0051647	ND	.00597	mg/kg	
1995	SW8240	S	.	.0005652	ND	.00108	mg/kg	
1995	SW8240	S	.	.0010681	ND	.00247	mg/kg	

N = 6

-------- Site=Southeast Runway Method=Organics Analyte=Chloromethane ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.0010444	ND	.001170	mg/kg	
1995	SW8240	S	.	.0001778	ND	.000937	mg/kg	
1995	SW8240	S	.	.0004880	ND	.000974	mg/kg	
1995	SW8240	S	.	.0027262	ND	.005370	mg/kg	
1995	SW8240	S	.	.0001631	ND	.000968	mg/kg	
1995	SW8240	S	.	.0009241	ND	.002230	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

----------- Site=Southeast Runway Method=Organics Analyte=Chrysene ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.0348	ND	0.0352	mg/kg	
1995	SW8270	S	.	0.0181	ND	0.0284	mg/kg	
1995	SW8270	S	.	0.0189	ND	0.0295	mg/kg	
1995	SW8270	S	.	12.0061	ND	14.7000	mg/kg	
1995	SW8270	S	.	0.0184	ND	0.0222	mg/kg	
1995	SW8270	S	.	0.0679	ND	0.0732	mg/kg	

N = 6

------ Site=Southeast Runway Method=Organics Analyte=Di-n-octylphthalate ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.008989	ND	0.0147	mg/kg	
1995	SW8270	S	.	0.000009	ND	0.0118	mg/kg	
1995	SW8270	S	.	0.010261	ND	0.0123	mg/kg	
1995	SW8270	S	.	0.030825	ND	21.5000	mg/kg	
1995	SW8270	S	.	0.029089	ND	0.0326	mg/kg	
1995	SW8270	S	.	0.001503	ND	0.1070	mg/kg	

N = 6

----- Site=Southeast Runway Method=Organics Analyte=Dibenz(a,h)anthracene -----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.0148	ND	0.0320	mg/kg	
1995	SW8270	S	.	0.0249	ND	0.0258	mg/kg	
1995	SW8270	S	.	0.0121	ND	0.0268	mg/kg	
1995	SW8270	S	.	16.9852	ND	18.4000	mg/kg	
1995	SW8270	S	.	0.0231	ND	0.0278	mg/kg	
1995	SW8270	S	.	0.0207	ND	0.0916	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

--------- Site=Southeast Runway Method=Organics Analyte=Dibenzofuran ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.0080	ND	0.0209	mg/kg	
1995	SW8270	S	.	0.0139	ND	0.0169	mg/kg	
1995	SW8270	S	.	0.0033	ND	0.0176	mg/kg	
1995	SW8270	S	.	11.1933	ND	14.8000	mg/kg	
1995	SW8270	S	.	0.0223	ND	0.0224	mg/kg	
1995	SW8270	S	.	0.0475	ND	0.0737	mg/kg	

N = 6

----- Site=Southeast Runway Method=Organics Analyte=Dibromochloromethane ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.0006711	ND	.000988	mg/kg	
1995	SW8240	S	.	.0000819	ND	.000795	mg/kg	
1995	SW8240	S	.	.0003144	ND	.000826	mg/kg	
1995	SW8240	S	.	.0041047	ND	.004550	mg/kg	
1995	SW8240	S	.	.0005465	ND	.000821	mg/kg	
1995	SW8240	S	.	.0007396	ND	.001890	mg/kg	

N = 6

------- Site=Southeast Runway Method=Organics Analyte=Dibutyl phthalate -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.00002	ND	0.0150	mg/kg	
1995	SW8270	S	.	0.01062	ND	0.0121	mg/kg	
1995	SW8270	S	.	0.00665	ND	0.0125	mg/kg	
1995	SW8270	S	.	4.65790	ND	14.0000	mg/kg	
1995	SW8270	S	.	0.00018	ND	0.0211	mg/kg	
1995	SW8270	S	.	0.02994	ND	0.0696	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

----- Site=Southeast Runway Method=Organics Analyte=Diesel Range Organics -----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	AK102	S	.	3.34	ND	5	mg/kg	
1995	AK102	S	.	1.91	ND	4	mg/kg	
1995	AK102	S	.	0.92	ND	4	mg/kg	
1995	AK102	S	18000	18000.00	DET	4	mg/kg	
1995	AK102	S	26	26.00	DET	4	mg/kg	
1995	AK102	S	7100	7100.00	DET	4	mg/kg	

N = 6

------ Site=Southeast Runway Method=Organics Analyte=Diethylphthalate --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.01078	ND	0.0194	mg/kg	
1995	SW8270	S	.	0.01089	ND	0.0156	mg/kg	
1995	SW8270	S	.	0.00097	ND	0.0163	mg/kg	
1995	SW8270	S	.	6.15339	ND	10.2000	mg/kg	
1995	SW8270	S	.	0.01376	ND	0.0154	mg/kg	
1995	SW8270	S	.	0.04566	ND	0.0508	mg/kg	

N = 6

------ Site=Southeast Runway Method=Organics Analyte=Dimethylphthalate -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.01306	ND	0.0144	mg/kg	
1995	SW8270	S	.	0.00765	ND	0.0116	mg/kg	
1995	SW8270	S	.	0.00444	ND	0.0121	mg/kg	
1995	SW8270	S	.	4.61782	ND	8.7300	mg/kg	
1995	SW8270	S	.	0.00375	ND	0.0132	mg/kg	
1995	SW8270	S	.	0.03982	ND	0.0435	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

Site=Southeast Runway Method=Organics Analyte=Diphenylamine (N-Nitrosodiphenyla

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.01811	ND	0.0342	mg/kg	
1995	SW8270	S	.	0.02144	ND	0.0276	mg/kg	
1995	SW8270	S	.	0.00328	ND	0.0287	mg/kg	
1995	SW8270	S	.	8.66258	ND	10.8000	mg/kg	
1995	SW8270	S	.	0.00341	ND	0.0164	mg/kg	
1995	SW8270	S	.	0.02637	ND	0.0540	mg/kg	

N = 6

--------- Site=Southeast Runway Method=Organics Analyte=Ethylbenzene ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	0.00072	ND	0.000808	mg/kg	
1995	SW8240	S	.	0.00063	ND	0.000649	mg/kg	
1995	SW8240	S	.	0.00053	ND	0.000675	mg/kg	
1995	SW8240	S	6.81	6.81000	DET	0.082100	mg/kg	
1995	SW8240	S	.	0.00063	ND	0.000671	mg/kg	
1995	SW8240	S	.	0.00150	ND	0.001540	mg/kg	

N = 6

--------- Site=Southeast Runway Method=Organics Analyte=Fluoranthene ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.00338	ND	0.0282	mg/kg	
1995	SW8270	S	.	0.00793	ND	0.0227	mg/kg	
1995	SW8270	S	.	0.00919	ND	0.0236	mg/kg	
1995	SW8270	S	.	8.25991	ND	14.4000	mg/kg	
1995	SW8270	S	.	0.00937	ND	0.0218	mg/kg	
1995	SW8270	S	.	0.03024	ND	0.0718	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

----------- Site=Southeast Runway Method=Organics Analyte=Fluorene ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.01319	ND	0.0250	mg/kg	
1995	SW8270	S	.	0.01858	ND	0.0201	mg/kg	
1995	SW8270	S	.	0.01440	ND	0.0209	mg/kg	
1995	SW8270	S	.	0.43117	ND	15.3000	mg/kg	
1995	SW8270	S	.	0.01852	ND	0.0231	mg/kg	
1995	SW8270	S	0.563	0.56300	DET	0.0761	mg/kg	

N = 6

---- Site=Southeast Runway Method=Organics Analyte=Gasoline Range Organics ----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	AK101	S	.	0.144	ND	1	mg/kg	
1995	AK101	S	.	0.492	ND	1	mg/kg	
1995	AK101	S	.	0.797	ND	1	mg/kg	
1995	AK101	S	540	540.000	DET	50	mg/kg	
1995	AK101	S	.	0.410	ND	1	mg/kg	
1995	AK101	S	150	150.000	DET	10	mg/kg	

N = 6

------- Site=Southeast Runway Method=Organics Analyte=Hexachlorobenzene -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.03213	ND	0.0332	mg/kg	
1995	SW8270	S	.	0.02621	ND	0.0268	mg/kg	
1995	SW8270	S	.	0.00077	ND	0.0279	mg/kg	
1995	SW8270	S	.	4.58258	ND	10.4000	mg/kg	
1995	SW8270	S	.	0.00925	ND	0.0157	mg/kg	
1995	SW8270	S	.	0.01117	ND	0.0519	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

------ Site=Southeast Runway Method=Organics Analyte=Hexachlorobutadiene ------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.00966	ND	0.0255	mg/kg	
1995	SW8270	S	.	0.01032	ND	0.0205	mg/kg	
1995	SW8270	S	.	0.00131	ND	0.0214	mg/kg	
1995	SW8270	S	.	0.43004	ND	10.6000	mg/kg	
1995	SW8270	S	.	0.01235	ND	0.0160	mg/kg	
1995	SW8270	S	.	0.01609	ND	0.0528	mg/kg	

N = 6

--- Site=Southeast Runway Method=Organics Analyte=Hexachlorocyclopentadiene ---

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.06753	ND	0.136	mg/kg	
1995	SW8270	S	.	0.03356	ND	0.110	mg/kg	
1995	SW8270	S	.	0.09210	ND	0.114	mg/kg	
1995	SW8270	S	.	3.85973	ND	130.000	mg/kg	
1995	SW8270	S	.	0.02648	ND	0.197	mg/kg	
1995	SW8270	S	.	0.35934	ND	0.648	mg/kg	

N = 6

------- Site=Southeast Runway Method=Organics Analyte=Hexachloroethane --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.00306	ND	0.0357	mg/kg	
1995	SW8270	S	.	0.01303	ND	0.0288	mg/kg	
1995	SW8270	S	.	0.00429	ND	0.0299	mg/kg	
1995	SW8270	S	.	4.18356	ND	9.0400	mg/kg	
1995	SW8270	S	.	0.01239	ND	0.0137	mg/kg	
1995	SW8270	S	.	0.01760	ND	0.0451	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

---- Site=Southeast Runway Method=Organics Analyte=Indeno(1,2,3-cd)pyrene -----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.01523	ND	0.0369	mg/kg	
1995	SW8270	S	.	0.00806	ND	0.0298	mg/kg	
1995	SW8270	S	.	0.00687	ND	0.0309	mg/kg	
1995	SW8270	S	.	5.95001	ND	16.7000	mg/kg	
1995	SW8270	S	.	0.00780	ND	0.0253	mg/kg	
1995	SW8270	S	.	0.00846	ND	0.0834	mg/kg	

N = 6

---------- Site=Southeast Runway Method=Organics Analyte=Isophorone -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.01318	ND	0.0158	mg/kg	
1995	SW8270	S	.	0.00155	ND	0.0127	mg/kg	
1995	SW8270	S	.	0.00998	ND	0.0132	mg/kg	
1995	SW8270	S	.	6.97457	ND	8.8300	mg/kg	
1995	SW8270	S	.	0.01007	ND	0.0134	mg/kg	
1995	SW8270	S	.	0.01964	ND	0.0440	mg/kg	

N = 6

------ Site=Southeast Runway Method=Organics Analyte=Methylene chloride -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.001110	.001110	DET	.001110	mg/kg	BJ
1995	SW8240	S	.000771	.000771	DET	.000895	mg/kg	BJ
1995	SW8240	S	.000609	.000609	DET	.000930	mg/kg	BJ
1995	SW8240	S	.001830	.001830	DET	.005130	mg/kg	BJ
1995	SW8240	S	.000472	.000472	DET	.000925	mg/kg	BJ
1995	SW8240	S	.001340	.001340	DET	.002120	mg/kg	BJ

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

---- Site=Southeast Runway Method=Organics Analyte=N-Nitrosodipropylamine -----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.00533	ND	0.02470	mg/kg	
1995	SW8270	S	.	0.01810	ND	0.01990	mg/kg	
1995	SW8270	S	.	0.01183	ND	0.02070	mg/kg	
1995	SW8270	S	.	1.53691	ND	6.06000	mg/kg	
1995	SW8270	S	.	0.00397	ND	0.00917	mg/kg	
1995	SW8270	S	.	0.02709	ND	0.03020	mg/kg	

N = 6

---------- Site=Southeast Runway Method=Organics Analyte=Naphthalene ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.003	ND	0.0227	mg/kg	
1995	SW8270	S	.	0.004	ND	0.0183	mg/kg	
1995	SW8270	S	.	0.015	ND	0.0191	mg/kg	
1995	SW8270	S	109.000	109.000	DET	14.1000	mg/kg	
1995	SW8270	S	0.058	0.058	DET	0.0214	mg/kg	
1995	SW8270	S	8.970	8.970	DET	0.0704	mg/kg	

N = 6

--------- Site=Southeast Runway Method=Organics Analyte=Nitrobenzene ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.00895	ND	0.0160	mg/kg	
1995	SW8270	S	.	0.00332	ND	0.0129	mg/kg	
1995	SW8270	S	.	0.00899	ND	0.0134	mg/kg	
1995	SW8270	S	.	3.32285	ND	7.3900	mg/kg	
1995	SW8270	S	.	0.00686	ND	0.0112	mg/kg	
1995	SW8270	S	.	0.02092	ND	0.0369	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

------- Site=Southeast Runway Method=Organics Analyte=Pentachlorophenol -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.00930	ND	0.01480	mg/kg	
1995	SW8270	S	.	0.00422	ND	0.01190	mg/kg	
1995	SW8270	S	.	0.00071	ND	0.01240	mg/kg	
1995	SW8270	S	.	3.69841	ND	4.13000	mg/kg	
1995	SW8270	S	.	0.00236	ND	0.00624	mg/kg	
1995	SW8270	S	.	0.01231	ND	0.02060	mg/kg	

N = 6

--------- Site=Southeast Runway Method=Organics Analyte=Phenanthrene ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.01074	ND	0.0188	mg/kg	
1995	SW8270	S	.	0.00673	ND	0.0151	mg/kg	
1995	SW8270	S	.	0.00019	ND	0.0157	mg/kg	
1995	SW8270	S	.	0.12352	ND	17.2000	mg/kg	
1995	SW8270	S	.	0.01879	ND	0.0261	mg/kg	
1995	SW8270	S	0.232	0.23200	DET	0.0859	mg/kg	

N = 6

----------- Site=Southeast Runway Method=Organics Analyte=Phenol ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.02063	ND	0.0328	mg/kg	
1995	SW8270	S	.	0.01632	ND	0.0265	mg/kg	
1995	SW8270	S	.	0.01029	ND	0.0275	mg/kg	
1995	SW8270	S	.	6.70640	ND	9.5900	mg/kg	
1995	SW8270	S	.	0.01047	ND	0.0145	mg/kg	
1995	SW8270	S	.	0.03223	ND	0.0478	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

------------ Site=Southeast Runway Method=Organics Analyte=Pyrene ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.01491	ND	0.0258	mg/kg	
1995	SW8270	S	.	0.01330	ND	0.0208	mg/kg	
1995	SW8270	S	.	0.00443	ND	0.0216	mg/kg	
1995	SW8270	S	.	3.50851	ND	17.6000	mg/kg	
1995	SW8270	S	.	0.01426	ND	0.0267	mg/kg	
1995	SW8270	S	.	0.04121	ND	0.0879	mg/kg	

N = 6

------------ Site=Southeast Runway Method=Organics Analyte=Styrene -----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.0006305	ND	.001080	mg/kg	
1995	SW8240	S	.	.0004693	ND	.000867	mg/kg	
1995	SW8240	S	.	.0003007	ND	.000901	mg/kg	
1995	SW8240	S	.	.0035654	ND	.004970	mg/kg	
1995	SW8240	S	.	.0001150	ND	.000896	mg/kg	
1995	SW8240	S	.	.0011288	ND	.002060	mg/kg	

N = 6

------- Site=Southeast Runway Method=Organics Analyte=Tetrachloroethene -------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.0003669	ND	.00127	mg/kg	
1995	SW8240	S	.	.0000209	ND	.00102	mg/kg	
1995	SW8240	S	.	.0007707	ND	.00106	mg/kg	
1995	SW8240	S	.	.0031699	ND	.00585	mg/kg	
1995	SW8240	S	.	.0007029	ND	.00105	mg/kg	
1995	SW8240	S	.	.0008795	ND	.00242	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

------------ Site=Southeast Runway Method=Organics Analyte=Toluene ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	0.00010	ND	0.000922	mg/kg	
1995	SW8240	S	.	0.00056	ND	0.000741	mg/kg	
1995	SW8240	S	.	0.00035	ND	0.000770	mg/kg	
1995	SW8240	S	4.54	4.54000	DET	0.062800	mg/kg	
1995	SW8240	S	.	0.00026	ND	0.000766	mg/kg	
1995	SW8240	S	.	0.00082	ND	0.001760	mg/kg	

N = 6

-- Site=Southeast Runway Method=Organics Analyte=Tribromomethane(Bromoform) ---

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.0006311	ND	.000774	mg/kg	
1995	SW8240	S	.	.0005650	ND	.000622	mg/kg	
1995	SW8240	S	.	.0006057	ND	.000647	mg/kg	
1995	SW8240	S	.	.0012662	ND	.003570	mg/kg	
1995	SW8240	S	.	.0004720	ND	.000644	mg/kg	
1995	SW8240	S	.	.0006041	ND	.001480	mg/kg	

N = 6

-------- Site=Southeast Runway Method=Organics Analyte=Trichloroethene --------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.0001567	ND	.000926	mg/kg	
1995	SW8240	S	.	.0005502	ND	.000744	mg/kg	
1995	SW8240	S	.	.0003796	ND	.000773	mg/kg	
1995	SW8240	S	.	.0014627	ND	.004270	mg/kg	
1995	SW8240	S	.	.0002251	ND	.000769	mg/kg	
1995	SW8240	S	.	.0004382	ND	.001770	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

--------- Site=Southeast Runway Method=Organics Analyte=Vinyl acetate ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.0001391	ND	.001070	mg/kg	
1995	SW8240	S	.	.0005064	ND	.000862	mg/kg	
1995	SW8240	S	.	.0002789	ND	.000895	mg/kg	
1995	SW8240	S	.	.0043686	ND	.004940	mg/kg	
1995	SW8240	S	.	.0004037	ND	.000891	mg/kg	
1995	SW8240	S	.	.0002541	ND	.002050	mg/kg	

N = 6

-------- Site=Southeast Runway Method=Organics Analyte=Vinyl chloride ---------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.00058475	ND	.000893	mg/kg	
1995	SW8240	S	.	.00071432	ND	.000718	mg/kg	
1995	SW8240	S	.	.00057473	ND	.000747	mg/kg	
1995	SW8240	S	.	.00016118	ND	.004120	mg/kg	
1995	SW8240	S	.	.00060087	ND	.000743	mg/kg	
1995	SW8240	S	.	.00085878	ND	.001710	mg/kg	

N = 6

-- Site=Southeast Runway Method=Organics Analyte=bis(2-Chloroethoxy)methane ---

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.01119	ND	0.01130	mg/kg	
1995	SW8270	S	.	0.00537	ND	0.00912	mg/kg	
1995	SW8270	S	.	0.00918	ND	0.00948	mg/kg	
1995	SW8270	S	.	1.24620	ND	9.59000	mg/kg	
1995	SW8270	S	.	0.01189	ND	0.01450	mg/kg	
1995	SW8270	S	.	0.02771	ND	0.04780	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

---- Site=Southeast Runway Method=Organics Analyte=bis(2-Chloroethyl)ether ----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.00770	ND	0.0176	mg/kg	
1995	SW8270	S	.	0.00781	ND	0.0142	mg/kg	
1995	SW8270	S	.	0.00654	ND	0.0148	mg/kg	
1995	SW8270	S	.	6.89925	ND	9.5900	mg/kg	
1995	SW8270	S	.	0.01390	ND	0.0145	mg/kg	
1995	SW8270	S	.	0.03742	ND	0.0478	mg/kg	

N = 6

-- Site=Southeast Runway Method=Organics Analyte=bis(2-Chloroisopropyl)ether --

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.01065	ND	0.0169	mg/kg	
1995	SW8270	S	.	0.00651	ND	0.0136	mg/kg	
1995	SW8270	S	.	0.00998	ND	0.0141	mg/kg	
1995	SW8270	S	.	4.41931	ND	9.9900	mg/kg	
1995	SW8270	S	.	0.01017	ND	0.0151	mg/kg	
1995	SW8270	S	.	0.03285	ND	0.0498	mg/kg	

N = 6

-- Site=Southeast Runway Method=Organics Analyte=bis(2-Ethylhexyl)phthalate ---

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8270	S	.	0.012792	ND	0.0159	mg/kg	
1995	SW8270	S	0.047	0.047000	DET	0.0128	mg/kg	
1995	SW8270	S	.	0.006913	ND	0.0134	mg/kg	
1995	SW8270	S	.	0.043930	ND	16.3000	mg/kg	
1995	SW8270	S	.	0.011290	ND	0.0246	mg/kg	
1995	SW8270	S	.	0.040263	ND	0.0811	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

---- Site=Southeast Runway Method=Organics Analyte=cis-1,2-Dichloroethene -----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.0000454	ND	.001110	mg/kg	
1995	SW8240	S	.	.0007817	ND	.000893	mg/kg	
1995	SW8240	S	.	.0001078	ND	.000928	mg/kg	
1995	SW8240	S	.	.0018292	ND	.005120	mg/kg	
1995	SW8240	S	.	.0008470	ND	.000923	mg/kg	
1995	SW8240	S	.	.0007756	ND	.002120	mg/kg	

N = 6

---- Site=Southeast Runway Method=Organics Analyte=cis-1,3-Dichloropropene ----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.0003208	ND	.000792	mg/kg	
1995	SW8240	S	.	.0002505	ND	.000637	mg/kg	
1995	SW8240	S	.	.0001233	ND	.000662	mg/kg	
1995	SW8240	S	.	.0017179	ND	.003650	mg/kg	
1995	SW8240	S	.	.0003569	ND	.000658	mg/kg	
1995	SW8240	S	.	.0003026	ND	.001510	mg/kg	

N = 6

---------- Site=Southeast Runway Method=Organics Analyte=m&p-Xylenes ----------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	0.0014	ND	0.00191	mg/kg	
1995	SW8240	S	.	0.0002	ND	0.00154	mg/kg	
1995	SW8240	S	.	0.0012	ND	0.00160	mg/kg	
1995	SW8240	S	29.8000	29.8000	DET	0.13800	mg/kg	
1995	SW8240	S	.	0.0013	ND	0.00159	mg/kg	
1995	SW8240	S	0.0141	0.0141	DET	0.00365	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

----------- Site=Southeast Runway Method=Organics Analyte=o-Xylene ------------

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	0.0006	ND	0.000865	mg/kg	
1995	SW8240	S	.	0.0005	ND	0.000696	mg/kg	
1995	SW8240	S	.	0.0001	ND	0.000723	mg/kg	
1995	SW8240	S	13.2000	13.2000	DET	0.072500	mg/kg	
1995	SW8240	S	.	0.0000	ND	0.000719	mg/kg	
1995	SW8240	S	0.0048	0.0048	DET	0.001650	mg/kg	

N = 6

--- Site=Southeast Runway Method=Organics Analyte=trans-1,2-Dichloroethene ----

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.0011545	ND	.00135	mg/kg	
1995	SW8240	S	.	.0002875	ND	.00108	mg/kg	
1995	SW8240	S	.	.0001937	ND	.00112	mg/kg	
1995	SW8240	S	.	.0016956	ND	.00620	mg/kg	
1995	SW8240	S	.	.0007034	ND	.00112	mg/kg	
1995	SW8240	S	.	.0023791	ND	.00257	mg/kg	

N = 6

--- Site=Southeast Runway Method=Organics Analyte=trans-1,3-Dichloropropene ---

Data Source	Analytical Method	Lab Matrix	Result	Est. Conc (a)	Flag	DL	Units	Lab Footnote
1995	SW8240	S	.	.0003577	ND	.000746	mg/kg	
1995	SW8240	S	.	.0003435	ND	.000600	mg/kg	
1995	SW8240	S	.	.0001572	ND	.000623	mg/kg	
1995	SW8240	S	.	.0011434	ND	.003440	mg/kg	
1995	SW8240	S	.	.0003859	ND	.000620	mg/kg	
1995	SW8240	S	.	.0006639	ND	.001420	mg/kg	

N = 6

a. Random uniform numbers, between zero and the lesser of the minimum result a

APPENDIX 4B

RISK-BASED SCREENING

Note: Methodology for conducting risk-based screening is described in Section 3 of Volume 1.

APPENDIX 4B
LIST OF TABLES

Table 4B-1
Screening Results for Southeast Runway—Surface Soil

Chemical of Potential Concern	CAS number	Classification	Screening Result
Benzo(a)pyrene	50-32-8	PNA	Yes
Dibenz(a,h)anthracene	53-70-3	PNA	Yes
Benzo(b)fluoranthene	205-99-2	PNA	Yes
Benzo(a)anthracene	56-55-3	PNA	Yes
Indeno(1,2,3-cd)pyrene	193-39-5	PNA	Yes
Lead	7439-92-1	Metal	NV [a]
Phenanthrene	85-01-8	PNA	NV
Benzo(g,h,i)perylene	191-24-2	PNA	NV
2-Methylnaphthalene	91-57-6	PNA	NV

Yes = Screening level exceeded Region III risk-based concentration and is a chemical of potential concern.
NV = No toxicity values are available for this analyte. A screening level was not calculated for this analyte.
PNA = Polynuclear aromatic hydrocarbon.
[a] Risk from exposure to lead is evaluated using the USEPA IEUBK model.

RISK BASED SCREENING FOR SOIL

Sample Date: 10/13/95

FACILITY: GALENA RISK ASSESSMENT, PHASE II

SWMU: SOUTHEAST RUNWAY

Chemical Name	CAS Number	Oral RfD mg/kg/day	Oral SF $(mg/kg/day)^{-1}$	Frequency of Detection	Maximum Detection mg/kg	Mean mg/kg	Standard Deviation	UCL mg/kg	EPA REGION III, RESIDENTIAL Screening Level mg/kg	Reg. Ratio	Meets Criteria
Benzo(a)pyrene	50-32-8	.00000E+0	.73000E+1	1/4	.554000E+0	.194000E+0	.257000E+0	.496000E+0	.87496E-1	6.33167	YES
Dibenz(a,h)anthracene	53-70-3	.00000E+0	.73000E+1	1/4	.947000E-1	.558000E-1	.317000E-1	.930000E-1	.87496E-1	1.08233	YES
Benzo(b)fluoranthene	205-99-2	.00000E+0	.73000E+0	1/4	.447000E+0	.163000E+0	.205000E+0	.404000E+0	.87496E+0	0.51088	YES
Benzo(a)anthracene	56-55-3	.00000E+0	.73000E+0	1/4	.354000E+0	.125000E+0	.160000E+0	.313000E+0	.87496E+0	0.40459	YES
Indeno(1,2,3-cd)pyrene	193-39-5	.00000E+0	.73000E+0	1/4	.240000E+0	.108000E+0	.112000E+0	.240000E+0	.87496E+0	0.27430	YES
Benzo(k)fluoranthene	207-08-9	.00000E+0	.73000E-1	1/4	.461000E+0	.177000E+0	.202000E+0	.415000E+0	.87496E+1	0.05269	NO
bis(2-Ethylhexyl)phthalate	117-81-7	.20000E-1	.14000E-1	2/4	.285000E+0	.831000E-1	.137000E+0	.40100E+14	.45623E+2	0.00625	NO
Chrysene	218-01-9	.00000E+0	.73000E-2	1/4	.515000E+0	.150000E+0	.236000E+0	.826000E+4	.87496E+2	0.00589	NO
Pyrene	129-00-0	.30000E-1	.00000E+0	1/4	.517000E+0	.148000E+0	.243000E+0	.541000E+7	.23464E+4	0.00022	NO
Fluoranthene	206-44-0	.40000E-1	.00000E+0	1/4	.435000E+0	.107000E+0	.205000E+0	.228000E+5	.31285E+4	0.00014	NO
Naphthalene	91-20-3	.40000E-1	.00000E+0	1/4	.225000E-1	.125000E-1	.107000E-1	.251000E-1	.31285E+4	0.00001	NO
Phenanthrene	85-01-8	.00000E+0	.00000E+0	1/4	.149000E+0	.790000E-1	.704000E-1	.162000E+0	.00000E+0	0.00000	NV
Benzo(g,h,i)perylene	191-24-2	.00000E+0	.00000E+0	1/4	.212000E+0	.704000E-1	.960000E-1	.183000E+0	.00000E+0	0.00000	NV
Anthracene	120-12-7	.30000E+0	.00000E+0	1/4	.533000E-1	.223000E-1	.230000E-1	.493000E-1	.23464E+5	0.00000	NO
2-Methylnaphthalene	91-57-6	.00000E+0	.00000E+0	1/4	.336000E-1	.188000E-1	.105000E-1	.312000E-1	.00000E+0	0.00000	NV
Diesel Range Organics	110-54-3	.00000E+0	.00000E+0	4/4	.250000E+3	.158000E+3	.640000E+2	.233000E+3	.00000E+0	0.00000	NV
Lead	7439-92-1	.00000E+0	.00000E+0	4/4	.513000E+2	.273000E+2	.200000E+2	.508000E+2	.00000E+0	0.00000	NV

Parameters used in this report:

Body weight, adult	70.00000	kg
Body weight, child	15.00000	kg
Lifetime	70	years
Exposure Duration	6	years
Exposure Frequency	350	days/year
Exposure Interval	0.00	sec.
Absorption Factor	1.00000	
Soil Intake Assumption, adult	0.10000	g/day
Soil Intake Assumption, child	0.20000	g/day
Age-adjusted Soil Ingestion Factor	114.29000	mg-yr/kg-day
Cancer Risk, Class A,B	.00000100	
Cancer Risk, Class C	.00000100	
Hazard Quotient	1.00000	
True Soil Porosity	0.50000	
True Soil/Particulate Density	0.00000	g/cm^3
Averaging Time	6.00000	years
Area of Contamination	50000000.00	cm^2
Side Length of Contaminated Area	0.00000	m
Diffusion Height	0.00000	m
Inhalation Rate	0.00000	m^3/day
Wind Speed	0.00000	m/sec
Mean Annual Wind Speed	4.50000	m/sec
Equivalent Threshold Wind Speed	12.80000	m/sec
Vegetative Cover	0.00000	
Um/Ut Function	0.04970	
Decision Factor	0.10000	

Table 4B-2
Screening Results for Southeast Runway—Subsurface Soil

Chemical of Potential Concern	CAS number	Classification	Screening Result
Phenanthrene	85-01-8	PNA	NV
2-Methylnaphthalene	91-57-6	PNA	NV

NV = No toxicity values are available for this analyte. A screening level was not calculated for this analyte.
PNA = Polynuclear aromatic hydrocarbon.

RISK BASED SCREENING FOR SOIL

Sample Date: 10/13/95

FACILITY: GALENA RISK ASSESSMENT, PHASE II

SWMU: SOUTHEAST RUNWAY

Chemical Name	CAS Number	Oral RfD mg/kg/day	Oral SF $(mg/kg/day)^{-1}$	Frequency of Detection	Maximum Detection mg/kg	Mean mg/kg	Standard Deviation	UCL mg/kg	EPA REGION III, RESIDENTIAL Screening Level mg/kg	Reg. Ratio	Meets Criteria
Naphthalene	91-20-3	.40000E-1	.00000E+0	3/6	.109000E+3	.178000E+2	.439000E+2	.62000E+16	.31285E+4	0.03484	NO
Benzene	71-43-2	.00000E+0	.29000E-1	1/6	.336000E+0	.563000E-1	.137000E+0	.169000E+0	.22025E+2	0.01526	NO
bis(2-Ethylhexyl)phthalate	117-81-7	.20000E-1	.14000E-1	1/6	.470000E-1	.270000E-1	.185000E-1	.423000E-1	.45623E+2	0.00103	NO
Ethylbenzene	100-41-4	.10000E+0	.00000E+0	1/6	.681000E+1	.114000E+1	.278000E+1	.342000E+1	.78214E+4	0.00087	NO
Toluene	108-88-3	.20000E+0	.00000E+0	1/6	.454000E+1	.757000E+0	.185000E+1	.228000E+1	.15642E+5	0.00029	NO
m&p-Xylenes	1330-20-7S	.20000E+1	.00000E+0	2/6	.298000E+2	.497000E+1	.122000E+2	.150000E+2	.15642E+6	0.00019	NO
Fluorene	86-73-7	.40000E-1	.00000E+0	1/6	.563000E+0	.176000E+0	.252000E+0	.384000E+0	.31285E+4	0.00018	NO
o-Xylene	95-47-6	.20000E+1	.00000E+0	2/6	.132000E+2	.368000E+0	.539000E+1	.36400E+16	.15642E+6	0.00008	NO
Acenaphthene	83-32-9	.60000E-1	.00000E+0	1/6	.225000E+0	.764000E-1	.932000E-1	.153000E+0	.46928E+4	0.00005	NO
Acetone	67-64-1	.10000E+0	.00000E+0	4/6	.175000E+0	.680000E-1	.707000E-1	.139000E+4	.78214E+4	0.00002	NO
Phenanthrene	85-01-8	.00000E+0	.00000E+0	1/6	.232000E+0	.109000E+0	.938000E-1	.617000E+4	.00000E+0	0.00000	NV
2-Methylnaphthalene	91-57-6	.00000E+0	.00000E+0	3/6	.235000E+3	.307000E+2	.950000E+2	.79900E+17	.00000E+0	0.00000	NV
2-Butanone(MEK)	78-93-3	.60000E+0	.00000E+0	2/6	.609000E-1	.145000E-1	.231000E-1	.652000E+0	.46928E+5	0.00000	NO
Diesel Range Organics	110-54-3	.00000E+0	.00000E+0	3/6	.180000E+5	.605000E+4	.734000E+4	.16400E+19	.00000E+0	0.00000	NV
Gasoline Range Organics		.00000E+0	.00000E+0	2/6	.540000E+3	.108000E+3	.216000E+3	.16100E+12	.00000E+0	0.00000	NV

Parameters used in this report:

Body weight, adult	70.00000	kg
Body weight, child	15.00000	kg
Lifetime	70	years
Exposure Duration	6	years
Exposure Frequency	350	days/year
Exposure Interval	0.00	sec.
Absorption Factor	1.00000	
Soil Intake Assumption, adult	0.10000	g/day
Soil Intake Assumption, child	0.20000	g/day
Age-adjusted Soil Ingestion Factor	114.29000	mg-yr/kg-day
Cancer Risk, Class A,B	.00000100	
Cancer Risk, Class C	.00000100	
Hazard Quotient	1.00000	

True Soil Porosity	0.50000	
True Soil/Particulate Density	0.00000	g/cm^3
Averaging Time	6.00000	years
Area of Contamination	50000000.00	cm^2
Side Length of Contaminated Area	0.00000	m
Diffusion Height	0.00000	m
Inhalation Rate	0.00000	m^3/day
Wind Speed	0.00000	m/sec
Mean Annual Wind Speed	4.50000	m/sec
Equivalent Threshold Wind Speed	12.80000	m/sec
Vegetative Cover	0.00000	
Um/Ut Function	0.04970	
Decision Factor	0.10000	

Table 4B-3
Screening Results for Southeast Runway—Groundwater

Chemical of Potential Concern	CAS number	Classification	Screening Result
Beryllium	7440-41-7	Metal	Yes
Benzene	71-43-2	Volatile	Yes
1,2-Dichloroethane	107-06-2	Volatile	Yes
Chloromethane	74-87-3	Volatile	Yes
Chloroform	67-66-3	Volatile	Yes
Trichloroethene	79-01-6	Volatile	Yes
Phenanthrene	85-01-8	PNA	NV
2-Methylnaphthalene	91-57-6	PNA	NV

Yes = Screening level exceeded Region III risk-based concentration and is a chemical of potential concern.
NV = No toxicity values are available for this analyte. A screening level was not calculated for this analyte.
PNA = Polynuclear aromatic hydrocarbon.

RISK BASED SCREENING FOR WATER

Sample Date: 10/13/95

FACILITY: GALENA RISK ASSESSMENT, PHASE II

SWMU: SOUTHEAST RUNWAY

Chemical Name	CAS Number	Oral RfD mg/kg/day	Oral SF $(mg/kg/day)^{-1}$	Frequency of Detection	Maximum Detection mg/L	Mean mg/L	Standard Deviation	UCL mg/L	EPA REGION III, RESIDENTIAL Screening Level mg/L	Reg. Ratio	Meets Criteria
Beryllium	7440-41-7	.50000E-2	.43000E+1	4/4	.39400E-2	.173000E-2	.19200E-2	.399000E-2	.155700E-4	252.9696	YES
Benzene	71-43-2	.00000E+0	.29000E-1	2/4	.58100E-1	.145000E-1	.29000E-1	.19700E+32	.363760E-3	159.7193	YES
1,2-Dichloroethane	107-06-2	.00000E+0	.91000E-1	2/4	.45500E-2	.142000E-2	.21400E-2	.394000E-2	.115920E-3	39.24967	YES
Chloromethane	74-87-3	.00000E+0	.13000E-1	1/4	.11900E-2	.365000E-3	.55500E-3	.102000E-2	.143421E-2	0.82972	YES
Chloroform	67-66-3	.10000E-1	.61000E-2	1/4	.38800E-4	.213000E-4	.13100E-4	.367000E-4	.153370E-3	0.25298	YES
Trichloroethene	79-01-6	.60000E-2	.11000E-1	3/4	.20600E-3	.658000E-4	.94500E-4	.210000E+5	.155418E-2	0.13255	YES
Naphthalene	91-20-3	.40000E-1	.00000E+0	1/4	.80700E-1	.208000E-1	.39900E-1	.678000E-1	.146000E+1	0.05527	NO
m&p-Xylenes	1330-20-7S	.20000E+1	.00000E+0	2/4	.28400E-1	.716000E-2	.14200E-1	.13400E+19	.620294E+0	0.04578	NO
Ethylbenzene	100-41-4	.10000E+0	.00000E+0	2/4	.21600E-1	.543000E-2	.10800E-1	.181000E-1	.132811E+1	0.01626	NO
Toluene	108-88-3	.20000E+0	.00000E+0	4/4	.60000E-2	.166000E-2	.28900E-2	.507000E-2	.747037E+0	0.00803	NO
o-Xylene	95-47-6	.20000E+1	.00000E+0	1/4	.10800E-1	.280000E-2	.53300E-2	.908000E-2	.143137E+1	0.00755	NO
Fluorene	86-73-7	.40000E-1	.00000E+0	1/4	.12900E-2	.791000E-3	.44200E-3	.131000E-2	.146000E+1	0.00088	NO
Acenaphthene	83-32-9	.60000E-1	.00000E+0	1/4	.79200E-3	.572000E-3	.22100E-3	.833000E-3	.219000E+1	0.00036	NO
Benzyl alcohol	100-51-6	.30000E+0	.00000E+0	1/4	.31300E-2	.104000E-2	.14100E-2	.270000E-2	.109500E+2	0.00029	NO
Dibutyl phthalate	84-74-2	.10000E+0	.00000E+0	1/4	.47600E-3	.223000E-3	.23400E-3	.498000E-3	.365000E+1	0.00013	NO
Chloroethane	75-00-3	.40000E+0	.00000E+0	1/4	.58900E-4	.389000E-4	.20400E-4	.629000E-4	.858823E+1	0.00001	NO
Phenanthrene	85-01-8	.00000E+0	.00000E+0	1/4	.73900E-3	.462000E-3	.26900E-3	.779000E-3	.000000E+0	0.00000	NV
2-Methylnaphthalene	91-57-6	.00000E+0	.00000E+0	1/4	.98900E-1	.252000E-1	.49100E-1	.10700E+13	.000000E+0	0.00000	NV
Diesel Range Organics	110-54-3	.00000E+0	.00000E+0	4/4	.93000E+1	.278000E+1	.43500E+1	.378000E+5	.000000E+0	0.00000	NV
Gasoline Range Organics		.00000E+0	.00000E+0	1/4	.79000E+0	.215000E+0	.38300E+0	.150000E+8	.000000E+0	0.00000	NV

Parameters used in this report:

Body weight, adult	70.00000	kg
Body weight, child	15.00000	kg
Lifetime	70	years
Exposure Duration	30	years
Exposure Frequency	350	days/year
Exposure Interval	0.00	sec.
Absorption Factor	1.00000	
Cancer Risk, Class A,B	.00000100	
Cancer Risk, Class C	.00000100	
Hazard Quotient	1.00000	
Averaging Time	30.00000	years
Area of Contamination	0.00	cm^2
Side Length of Contaminated Area	0.00000	m
Diffusion Height	0.00000	m
Volatilization Factor	0.50000	L/m^3
Drinking Water Ingestion	2.00000	L/day
Age-adjusted Water Ingestion	1.09000	L-y/kg-day
Age-adjusted Inhalation Factor	11.66000	m^3-y/kg-day
Decision Factor	0.10000	

Table 4B-4
Screening Results for Control Tower—Surface Soil

Chemical of Potential Concern	CAS number	Classification	Screening Result
Thallium	7440-28-0	Metal	Yes
Antimony	7440-36-0	Metal	Yes
Benzo(a)pyrene	50-32-8	PNA	Yes
Dieldrin	60-57-1	Pesticide	Yes
4,4'-DDT	50-29-3	Pesticide	Yes
Benzo(b)fluoranthene	205-99-2	PNA	Yes
Aldrin	309-00-2	Pesticide	Yes
Lead	7439-92-1	Metal	NV [a]
Phenanthrene	85-01-8	PNA	NV
Benzo(g,h,i)perylene	191-24-2	PNA	NV
2-Methylnaphthalene	91-57-6	PNA	NV

Yes = Screening level exceeded Region III risk-based concentration and is a chemical of potential concern.
NV = No toxicity values are available for this analyte. A screening level was not calculated for this analyte.
PNA = polynuclear aromatic hydrocarbon
[a] Risk from exposure to lead is evaluated using the USEPA IEUBK model.

RISK BASED SCREENING FOR SOIL

Sample Date: 10/13/95

FACILITY: GALENA RISK ASSESSMENT, PHASE II

SWMU: CONTROL TOWER

Chemical Name	CAS Number	Oral RfD mg/kg/day	Oral SF $(mg/kg/day)^{-1}$	Frequency of Detection	Maximum Detection mg/kg	Mean mg/kg	Standard Deviation	UCL mg/kg	EPA REGION III, RESIDENTIAL Screening Level mg/kg	Reg. Ratio	Meets Criteria
Thallium	7440-28-0	.80000E-4	.00000E+0	6/6	.294000E+2	.150000E+2	.127000E+2	.255000E+2	.62571E+1	4.69863	YES
Antimony	7440-36-0	.40000E-3	.00000E+0	6/6	.492000E+2	.294000E+2	.117000E+2	.390000E+2	.31285E+2	1.57260	YES
Benzo(a)pyrene	50-32-8	.00000E+0	.73000E+1	1/6	.896000E-1	.253000E-1	.309000E-1	.972000E-1	.87496E-1	1.02404	YES
Dieldrin	60-57-1	.50000E-4	.16000E+2	5/6	.116000E-1	.415000E-2	.456000E-2	.790000E-2	.39920E-1	0.29058	YES
4,4'-DDT	50-29-3	.50000E-3	.34000E+0	6/6	.496000E+0	.147000E+0	.190000E+0	.127000E+3	.18786E+1	0.26403	YES
Benzo(b)fluoranthene	205-99-2	.00000E+0	.73000E+0	1/6	.150000E+0	.260000E-1	.575000E-1	.476000E+0	.87496E+0	0.17144	YES
Aldrin	309-00-2	.30000E-4	.17000E+2	2/6	.587000E-2	.226000E-2	.251000E-2	.198000E-1	.37572E-1	0.15623	YES
Benzo(a)anthracene	56-55-3	.00000E+0	.73000E+0	1/6	.770000E-1	.233000E-1	.264000E-1	.450000E-1	.87496E+0	0.08800	NO
Indeno(1,2,3-cd)pyrene	193-39-5	.00000E+0	.73000E+0	1/6	.680000E-1	.200000E-1	.259000E-1	.248000E+2	.87496E+0	0.07772	NO
alpha-BHC	319-84-6	.00000E+0	.63000E+1	1/6	.703000E-2	.229000E-2	.266000E-2	.218000E+1	.10138E+0	0.06934	NO
Heptachlor epoxide	1024-57-3	.10000E-4	.91000E+1	2/6	.263000E-2	.931000E-3	.111000E-2	.184000E-2	.70189E-1	0.03747	NO
Benzo(k)fluoranthene	207-08-9	.00000E+0	.73000E-1	1/6	.150000E+0	.345000E-1	.553000E-1	.322000E+0	.87496E+1	0.01714	NO
gamma-BHC(Lindane)	58-89-9	.30000E-3	.13000E+1	2/6	.601000E-2	.114000E-2	.232000E-2	.195000E+0	.49132E+0	0.01223	NO
4,4'-DDD	72-54-8	.00000E+0	.24000E+0	6/6	.301000E-1	.132000E-1	.136000E-1	.246000E+0	.26613E+1	0.01131	NO
Heptachlor	76-44-8	.50000E-3	.45000E+1	3/6	.118000E-2	.236000E-3	.448000E-3	.606000E-2	.14193E+0	0.00831	NO
4,4'-DDE	72-55-9	.00000E+0	.34000E+0	5/6	.938000E-2	.487000E-2	.363000E-2	.785000E-2	.18786E+1	0.00499	NO
bis(2-Ethylhexyl)phthalate	117-81-7	.20000E-1	.14000E-1	1/6	.938000E-1	.275000E-1	.337000E-1	.469000E+0	.45623E+2	0.00206	NO
Chrysene	218-01-9	.00000E+0	.73000E-2	1/6	.106000E+0	.450000E-1	.386000E-1	.475000E+2	.87496E+2	0.00121	NO
delta-BHC	319-86-8	.45000E-3	.00000E+0	2/6	.103000E-1	.222000E-2	.408000E-2	.505000E+4	.35196E+2	0.00029	NO
Endrin aldehyde	7421-93-4	.30000E-3	.00000E+0	3/6	.326000E-2	.904000E-3	.132000E-2	.164000E+0	.23464E+2	0.00014	NO
Pyrene	129-00-0	.30000E-1	.00000E+0	1/6	.184000E+0	.472000E-1	.671000E-1	.102000E+0	.23464E+4	0.00008	NO
Fluoranthene	206-44-0	.40000E-1	.00000E+0	1/6	.201000E+0	.388000E-1	.796000E-1	.903000E+3	.31285E+4	0.00006	NO
Endosulfan I	959-98-8	.60000E-2	.00000E+0	5/6	.336000E-2	.127000E-2	.149000E-2	.640000E-1	.46928E+3	0.00001	NO
Phenanthrene	85-01-8	.00000E+0	.00000E+0	1/6	.127000E+0	.258000E-1	.481000E-1	.630000E+0	.00000E+0	0.00000	NV
Benzo(g,h,i)perylene	191-24-2	.00000E+0	.00000E+0	1/6	.777000E-1	.245000E-1	.265000E-1	.103000E+0	.00000E+0	0.00000	NV
Anthracene	120-12-7	.30000E+0	.00000E+0	1/6	.211000E-1	.825000E-2	.638000E-2	.173000E-1	.23464E+5	0.00000	NO
2-Methylnaphthalene	91-57-6	.00000E+0	.00000E+0	2/6	.231000E-1	.165000E-1	.794000E-2	.230000E-1	.00000E+0	0.00000	NV
Endosulfan II	33213-65-9	.60000E-2	.00000E+0	2/6	.674000E-4	.387000E-4	.282000E-4	.618000E-4	.46928E+3	0.00000	NO
Diesel Range Organics	110-54-3	.00000E+0	.00000E+0	5/6	.500000E+3	.117000E+3	.201000E+3	.176000E+6	.00000E+0	0.00000	NV
Lead	7439-92-1	.00000E+0	.00000E+0	6/6	.766000E+2	.219000E+2	.270000E+2	.142000E+3	.00000E+0	0.00000	NV

4B-8

Parameters used in this report:

Body weight, adult	70.00000	kg
Body weight, child	15.00000	kg
Lifetime	70	years
Exposure Duration	6	years
Exposure Frequency	350	days/year
Exposure Interval	0.00	sec.
Absorption Factor	1.00000	
Soil Intake Assumption, adult	0.10000	g/day
Soil Intake Assumption, child	0.20000	g/day
Age-adjusted Soil Ingestion Factor	114.29000	mg-yr/kg-day
Cancer Risk, Class A,B	.00000100	
Cancer Risk, Class C	.00000100	
Hazard Quotient	1.00000	

True Soil Porosity	0.50000	
True Soil/Particulate Density	0.00000	g/cm^3
Averaging Time	6.00000	years
Area of Contamination	50000000.00	cm^2
Side Length of Contaminated Area	0.00000	m
Diffusion Height	0.00000	m
Inhalation Rate	0.00000	m^3/day
Wind Speed	0.00000	m/sec
Mean Annual Wind Speed	4.50000	m/sec
Equivalent Threshold Wind Speed	12.80000	m/sec
Vegetative Cover	0.00000	
Um/Ut Function	0.04970	
Decision Factor	0.10000	

Table 4B-5
Screening Results for Control Tower—Groundwater

Chemical of Potential Concern	CAS number	Classification	Screening Result
Heptachlor epoxide	1024-57-3	Pesticide	Yes
Trichloroethene	79-01-6	Volatile	Yes
1,2-Dichloroethane	107-06-2	Volatile	Yes
Aldrin	309-00-2	Pesticide	Yes
Dieldrin	60-57-1	Pesticide	Yes
Heptachlor	76-44-8	Pesticide	Yes
cis-1,2-Dichloroethene	156-59-2	Volatile	Yes
gamma-BHC (Lindane)	58-89-9	Pesticide	Yes
beta-BHC	319-85-7	Pesticide	Yes
Dibromomethane	74-95-3	Volatile	NV

Yes = Screening level exceeded Region III risk-based concentration and is a chemical of potential concern.
NV = No toxicity values are available for this analyte. A screening level was not calculated for this analyte.

RISK BASED SCREENING FOR WATER

Sample Date: 10/13/95

FACILITY: GALENA RISK ASSESSMENT, PHASE II

SWMU: CONTROL TOWER

Chemical Name	CAS Number	Oral RfD mg/kg/day	Oral SF $(mg/kg/day)^{-1}$	Frequency of Detection	Maximum Detection mg/L	Mean mg/L	Standard Deviation	UCL mg/L	EPA REGION III, RESIDENTIAL Screening Level mg/L	Reg. Ratio	Meets Criteria
Heptachlor epoxide	1024-57-3	.10000E-4	.91000E+1	2/2	.55500E-4	.278000E-4	.39200E-4	.203000E-3	.116000E-5	47.87597	YES
Trichloroethene	79-01-6	.60000E-2	.11000E-1	2/2	.92800E-2	.481000E-2	.63300E-2	.331000E-1	.155418E-2	5.97098	YES
1,2-Dichloroethane	107-06-2	.00000E+0	.91000E-1	1/2	.64000E-3	.328000E-3	.44200E-3	.230000E-2	.115920E-3	5.52083	YES
Aldrin	309-00-2	.30000E-4	.17000E+2	1/2	.17700E-4	.893000E-5	.12400E-4	.643000E-4	.394000E-5	4.49289	YES
Dieldrin	60-57-1	.50000E-4	.16000E+2	1/2	.79000E-5	.525000E-5	.37500E-5	.220000E-4	.419000E-5	1.88734	YES
Heptachlor	76-44-8	.50000E-3	.45000E+1	2/2	.33000E-5	.185000E-5	.20500E-5	.110000E-4	.234000E-5	1.40770	YES
cis-1,2-Dichloroethene	156-59-2	.10000E-1	.00000E+0	1/2	.23300E-1	.117000E-1	.16500E-1	.851000E-1	.608333E-1	0.38301	YES
gamma-BHC(Lindane)	58-89-9	.30000E-3	.13000E+1	1/2	.13300E-4	.739000E-5	.83600E-5	.447000E-4	.515200E-4	0.25817	YES
beta-BHC	319-85-7	.00000E+0	.18000E+1	1/2	.71000E-5	.361000E-5	.49300E-5	.256000E-4	.372100E-4	0.19082	YES
4,4'-DDE	72-55-9	.00000E+0	.34000E+0	1/2	.50000E-5	.332000E-5	.23700E-5	.139000E-4	.196980E-3	0.02538	NO
trans-1,2-Dichloroethene	156-60-5	.20000E-1	.00000E+0	1/2	.13300E-2	.684000E-3	.91400E-3	.476000E-2	.121666E+0	0.01093	NO
m&p-Xylenes	1330-20-7S	.20000E+1	.00000E+0	1/2	.70000E-4	.657000E-4	.60100E-5	.926000E-4	.620294E+0	0.00011	NO
Endosulfan I	959-98-8	.60000E-2	.00000E+0	1/2	.94000E-5	.567000E-5	.52700E-5	.292000E-4	.219000E+0	0.00004	NO
Dibromomethane	74-95-3	.00000E+0	.00000E+0	1/2	.21000E-3	.113000E-3	.13700E-3	.726000E-3	.000000E+0	0.00000	NV
Diesel Range Organics	110-54-3	.00000E+0	.00000E+0	1/2	.34000E-1	.170000E-1	.24000E-1	.124000E+0	.000000E+0	0.00000	NV

Parameters used in this report:

Body weight, adult	70.00000	kg
Body weight, child	15.00000	kg
Lifetime	70	years
Exposure Duration	30	years
Exposure Frequency	350	days/year
Exposure Interval	0.00	sec.
Absorption Factor	1.00000	
Cancer Risk, Class A,B	.00000100	
Cancer Risk, Class C	.00000100	
Hazard Quotient	1.00000	

Averaging Time	30.00000	years
Area of Contamination	0.00	cm^2
Side Length of Contaminated Area	0.00000	m
Diffusion Height	0.00000	m
Volatialization Factor	0.50000	L/m^3
Drinking Water Ingestion	2.00000	L/day
Age-adjusted Water Ingestion	1.09000	L-y/kg-day
Age-adjusted Inhalation Factor	11.66000	m^3-y/kg-day
Decision Factor	0.10000	

4B-11

Table 4B-6

Detection Limit Screening for Surface Soil for the Southeast Runway Fuel Spill Site

Chemical Name	CAS No.	DL Minimum mg/kg	DL Maximum mg/kg	Screening Level mg/kg	Ratio	Exceeds Screening Level
N-Nitrosodipropylamine	621-64-7	.009210	.1010	9.12E-02	1.01E-01	NO
Hexachlorobenzene	118-74-1	.01580	.1740	3.99E-01	3.96E-02	NO
bis(2-Chloroethyl)ether	111-44-4	.01460	.160	5.81E-01	2.51E-02	NO
2,6-Dinitrotoluene	606-20-2	.02180	.330	9.39E-01	2.32E-02	NO
2,4-Dinitrotoluene	121-14-2	.01390	.1530	9.39E-01	1.48E-02	NO
2-Nitroaniline	88-74-4	.006280	.0690	4.69E-01	1.34E-02	NO
3,3'-Dichlorobenzidine	91-94-1	.01090	.120	1.42E+00	7.68E-03	NO
Vinyl chloride	75-01-4	.000759	.000946	3.36E-01	2.26E-03	NO
Hexachlorobutadiene	87-68-3	.01610	.1770	8.19E+00	1.97E-03	NO
bis(2-Chloroisopropyl)ether	39638-32-9	.01520	.1670	9.12E+00	1.67E-03	NO
Pentachlorophenol	87-86-5	.006280	.0690	5.32E+00	1.18E-03	NO
1,1-Dichloroethene	75-35-4	.000793	.000988	1.06E+00	7.40E-04	NO
1,4-Dichlorobenzene	106-46-7	.01610	.2450	2.66E+01	6.00E-04	NO
1,1,2,2-Tetrachloroethane	79-34-5	.001190	.001480	3.19E+00	3.70E-04	NO
Hexachloroethane	67-72-1	.01370	.1510	4.56E+01	3.00E-04	NO
Nitrobenzene	98-95-3	.01120	.1240	3.91E+01	2.90E-04	NO
2,4-Dinitrophenol	51-28-5	.04570	.5020	1.56E+02	2.90E-04	NO
Hexachlorocyclopentadiene	77-47-4	.1460	2.170	5.48E+02	2.70E-04	NO
2,4,6-Trichlorophenol	88-06-2	.01480	.2710	5.81E+01	2.50E-04	NO
cis-1,3-Dichloropropene	542-75-6	.000673	.000839	3.65E+00	1.80E-04	NO
Carbon tetrachloride	56-23-5	.000894	.001110	4.91E+00	1.80E-04	NO
trans-1,3-Dichloropropene	10061-02-6	.000634	.000790	3.65E+00	1.70E-04	NO
1,2-Dichloroethane	107-06-2	.000819	.001020	7.02E+00	1.20E-04	NO
Dibromochloromethane	124-48-1	.000840	.001050	7.60E+00	1.10E-04	NO
Tetrachloroethene	127-18-4	.001080	.001340	1.23E+01	9.00E-05	NO
Bromodichloromethane	75-27-4	.000820	.001020	1.06E+01	8.00E-05	NO
1,1,2-Trichloroethane	79-00-5	.000860	.001070	1.12E+01	8.00E-05	NO
Dibenzofuran	132-64-9	.02240	.2470	3.13E+02	7.00E-05	NO
1,2-Dichloropropane	78-87-5	.000640	.000797	9.39E+00	7.00E-05	NO
4-Nitroaniline	100-01-6	.01490	.1640	2.35E+02	6.00E-05	NO
4-Chloroaniline	106-47-8	.01520	.1670	3.13E+02	5.00E-05	NO
3-Nitroaniline	99-09-2	.01240	.1670	2.35E+02	5.00E-05	NO
4-Methylphenol/3-Methylphenol	106-44-5	.01450	.160	3.91E+02	4.00E-05	NO
2-Chlorophenol	95-57-8	.0140	.1790	3.91E+02	4.00E-05	NO
2,4-Dichlorophenol	120-83-2	.00860	.09450	2.35E+02	4.00E-05	NO
Benzene	71-43-2	.000910	.001130	2.20E+01	4.00E-05	NO
Isophorone	78-59-1	.01340	.1470	6.72E+02	2.00E-05	NO
2,4-Dimethylphenol	105-67-9	.02360	.2590	1.56E+03	2.00E-05	NO
1,2,4-Trichlorobenzene	120-82-1	.01520	.1670	7.82E+02	2.00E-05	NO
Chloromethane	74-87-3	.000990	.001230	4.91E+01	2.00E-05	NO

Table 4B-6
(Continued)

Chemical Name	CAS No.	DL Minimum mg/kg	DL Maximum mg/kg	Screening Level mg/kg	Ratio	Exceeds Screening Level
Fluorene	86-73-7	.02320	.2550	3.13E+03	1.00E-05	NO
Diphenylamine (N-Nitrosodiphenylamine)	122-39-4	.01650	.1810	1.96E+03	1.00E-05	NO
Di-n-octylphthalate	117-84-0	.01570	.360	1.56E+03	1.00E-05	NO
Trichloroethene	79-01-6	.000787	.000980	5.81E+01	1.00E-05	NO
Tribromomethane(Bromoform)	75-25-2	.000658	.000820	8.09E+01	1.00E-05	NO
Chloroform	67-66-3	.00110	.001370	1.05E+02	1.00E-05	NO
Bromomethane	74-83-9	.001120	.00140	1.10E+02	1.00E-05	NO
Phenol	108-95-2	.01460	.160	4.69E+04	0.00E+00	NO
Dimethylphthalate	131-11-3	.01330	.1460	7.82E+05	0.00E+00	NO
Diethylphthalate	84-66-2	.01550	.170	6.26E+04	0.00E+00	NO
Dibutyl phthalate	84-74-2	.0160	.2330	7.82E+03	0.00E+00	NO
Butylbenzylphthalate	85-68-7	.01040	.2520	1.56E+04	0.00E+00	NO
Benzyl alcohol	100-51-6	.02840	.4420	2.35E+04	0.00E+00	NO
Benzoic acid	65-85-0	.2190	2.40	3.13E+05	0.00E+00	NO
Acenaphthene	83-32-9	.01570	.1730	4.69E+03	0.00E+00	NO
4-Nitrophenol	100-02-7	.01560	.1710	4.85E+03	0.00E+00	NO
4-Bromophenyl phenyl ether	101-55-3	.01320	.1450	4.54E+03	0.00E+00	NO
2-Methylphenol(o-cresol)	95-48-7	.01040	.1180	3.91E+03	0.00E+00	NO
2-Chloronaphthalene	91-58-7	.01850	.2030	6.26E+03	0.00E+00	NO
2,4,5-Trichlorophenol	95-95-4	.01110	.1220	7.82E+03	0.00E+00	NO
1,3-Dichlorobenzene	541-73-1	.01350	.1720	6.96E+03	0.00E+00	NO
1,2-Dichlorobenzene	95-50-1	.01210	.1730	7.04E+03	0.00E+00	NO
trans-1,2-Dichloroethene	156-60-5	.001140	.001430	1.56E+03	0.00E+00	NO
o-Xylene	95-47-6	.000735	.000916	1.56E+05	0.00E+00	NO
m&p-Xylenes	108-32-3M	.001620	.002020	1.56E+05	0.00E+00	NO
cis-1,2-Dichloroethene	156-59-2	.000943	.001180	7.82E+02	0.00E+00	NO
Vinyl acetate	108-05-4	.000911	.001130	7.82E+04	0.00E+00	NO
Toluene	108-88-3	.000783	.000976	1.56E+04	0.00E+00	NO
Styrene	100-42-5	.000916	.001140	1.56E+04	0.00E+00	NO
Ethylbenzene	100-41-4	.000686	.000855	7.82E+03	0.00E+00	NO
Chloroethane	75-00-3	.001130	.001410	3.13E+04	0.00E+00	NO
Chlorobenzene	108-90-7	.000813	.001010	1.56E+03	0.00E+00	NO
Carbon disulfide	75-15-0	.000791	.000985	7.82E+03	0.00E+00	NO
Acetone	67-64-1	.005070	.006310	7.82E+03	0.00E+00	NO
4-Methyl-2-pentanone(MIBK)	108-10-1	.002420	.003010	6.26E+03	0.00E+00	NO
2-Chloroethyl vinyl ether	110-75-8	.000917	.001140	1.96E+03	0.00E+00	NO
2-Butanone(MEK)	78-93-3	.003980	.004950	4.69E+04	0.00E+00	NO
1,1-Dichloroethane	75-34-3	.001130	.001410	7.82E+03	0.00E+00	NO
1,1,1-Trichloroethane	71-55-6	.000833	.001040	7.04E+03	0.00E+00	NO
bis(2-Chloroethoxy)methane	111-91-1	.01210	.160	0.00E+00	0.00E+00	NV
Acenaphthylene	208-96-8	.01410	.1550	0.00E+00	0.00E+00	NV
4-Chlorophenyl phenyl ether		.009340	.2530	0.00E+00	0.00E+00	NV

Table 4B-6
(Continued)

Chemical Name	CAS No.	DL Minimum mg/kg	DL Maximum mg/kg	Screening Level mg/kg	Ratio	Exceeds Screening Level
4-Chloro-3-methylphenol	59-50-7	.00660	.07250	0.00E+00	0.00E+00	NV
4,6-Dinitro-2-methylphenol		.01660	1.540	0.00E+00	0.00E+00	NV
2-Nitrophenol	88-75-5	.01790	.1970	0.00E+00	0.00E+00	NV
2-Hexanone	591-78-6	.002720	.003390	0.00E+00	0.00E+00	NV
Gasoline Range Organics		1.0	1.0	0.00E+00	0.00E+00	NV

[a] No screening level is given for this chemical in the U.S. EPA Region III Risk-Based Concentration Table.

Table 4B-7

Detection Limit Screening for Subsurface Soil for the Southeast Runway Fuel Spill Site

Chemical Name	CAS No.	DL Minimum mg/kg	DL Maximum mg/kg	Screening Level mg/kg	Ratio	Exceeds Screening Level
Dibenz(a,h)anthracene	53-70-3	.02580	18.40	8.75E-02	2.95E-01	NO
Benzo(a)pyrene	50-32-8	.01750	14.30	8.75E-02	2.00E-01	NO
N-Nitrosodipropylamine	621-64-7	.009170	6.060	9.12E-02	1.01E-01	NO
Hexachlorobenzene	118-74-1	.01570	10.40	3.99E-01	3.93E-02	NO
Indeno(1,2,3-cd)pyrene	193-39-5	.02530	16.70	8.75E-01	2.89E-02	NO
bis(2-Chloroethyl)ether	111-44-4	.01420	9.590	5.81E-01	2.45E-02	NO
Benzo(a)anthracene	56-55-3	.02070	13.70	8.75E-01	2.37E-02	NO
Benzo(b)fluoranthene	205-99-2	.01950	12.90	8.75E-01	2.23E-02	NO
2,6-Dinitrotoluene	606-20-2	.01640	19.80	9.39E-01	1.75E-02	NO
2,4-Dinitrotoluene	121-14-2	.01390	9.160	9.39E-01	1.48E-02	NO
2-Nitroaniline	88-74-4	.006240	4.130	4.69E-01	1.33E-02	NO
3,3'-Dichlorobenzidine	91-94-1	.01090	7.180	1.42E+00	7.68E-03	NO
Benzo(k)fluoranthene	207-08-9	.03390	22.40	8.75E+00	3.87E-03	NO
Vinyl chloride	75-01-4	.000718	.004120	3.36E-01	2.14E-03	NO
Hexachlorobutadiene	87-68-3	.0160	10.60	8.19E+00	1.95E-03	NO
bis(2-Chloroisopropyl)ether	39638-32-9	.01360	9.990	9.12E+00	1.49E-03	NO
Pentachlorophenol	87-86-5	.006240	4.130	5.32E+00	1.17E-03	NO
1,1-Dichloroethene	75-35-4	.000750	.00430	1.06E+00	7.00E-04	NO
1,4-Dichlorobenzene	106-46-7	.01220	14.70	2.66E+01	4.60E-04	NO
1,1,2,2-Tetrachloroethane	79-34-5	.001120	.006440	3.19E+00	3.50E-04	NO
Hexachloroethane	67-72-1	.01370	9.040	4.56E+01	3.00E-04	NO
Nitrobenzene	98-95-3	.01120	7.390	3.91E+01	2.90E-04	NO
2,4-Dinitrophenol	51-28-5	.04550	30.10	1.56E+02	2.90E-04	NO
Chrysene	218-01-9	.02220	14.70	8.75E+01	2.50E-04	NO
Hexachlorocyclopentadiene	77-47-4	.110	130.0	5.48E+02	2.00E-04	NO
2,4,6-Trichlorophenol	88-06-2	.01120	16.20	5.81E+01	1.90E-04	NO
cis-1,3-Dichloropropene	542-75-6	.000637	.003650	3.65E+00	1.70E-04	NO
Carbon tetrachloride	56-23-5	.000846	.004850	4.91E+00	1.70E-04	NO
trans-1,3-Dichloropropene	10061-02-6	.00060	.003440	3.65E+00	1.60E-04	NO
1,2-Dichloroethane	107-06-2	.000775	.004440	7.02E+00	1.10E-04	NO
Dibromochloromethane	124-48-1	.000795	.004550	7.60E+00	1.00E-04	NO
Tetrachloroethene	127-18-4	.001020	.005850	1.23E+01	8.00E-05	NO
Bromodichloromethane	75-27-4	.000776	.004450	1.06E+01	7.00E-05	NO
1,1,2-Trichloroethane	79-00-5	.000813	.004660	1.12E+01	7.00E-05	NO
4-Nitroaniline	100-01-6	.01490	9.830	2.35E+02	6.00E-05	NO
1,2-Dichloropropane	78-87-5	.000605	.003470	9.39E+00	6.00E-05	NO
Dibenzofuran	132-64-9	.01690	14.80	3.13E+02	5.00E-05	NO
4-Chloroaniline	106-47-8	.01510	9.970	3.13E+02	5.00E-05	NO
4-Methylphenol/3-Methylphenol	106-44-5	.01450	9.570	3.91E+02	4.00E-05	NO
3-Nitroaniline	99-09-2	.009360	9.990	2.35E+02	4.00E-05	NO

Table 4B-7
(Continued)

Chemical Name	CAS No.	DL Minimum mg/kg	DL Maximum mg/kg	Screening Level mg/kg	Ratio	Exceeds Screening Level
2,4-Dichlorophenol	120-83-2	.008550	5.650	2.35E+02	4.00E-05	NO
2-Chlorophenol	95-57-8	.01050	10.70	3.91E+02	3.00E-05	NO
Isophorone	78-59-1	.01270	8.830	6.72E+02	2.00E-05	NO
2,4-Dimethylphenol	105-67-9	.02350	15.50	1.56E+03	2.00E-05	NO
1,2,4-Trichlorobenzene	120-82-1	.01510	9.970	7.82E+02	2.00E-05	NO
Chloromethane	74-87-3	.000937	.005370	4.91E+01	2.00E-05	NO
Pyrene	129-00-0	.02080	17.60	2.35E+03	1.00E-05	NO
Fluoranthene	206-44-0	.02180	14.40	3.13E+03	1.00E-05	NO
Diphenylamine (N-Nitrosodiphenylamine)	122-39-4	.01640	10.80	1.96E+03	1.00E-05	NO
Di-n-octylphthalate	117-84-0	.01180	21.50	1.56E+03	1.00E-05	NO
Trichloroethene	79-01-6	.000744	.004270	5.81E+01	1.00E-05	NO
Tribromomethane(Bromoform)	75-25-2	.000622	.003570	8.09E+01	1.00E-05	NO
Chloroform	67-66-3	.001040	.005970	1.05E+02	1.00E-05	NO
Bromomethane	74-83-9	.001060	.006080	1.10E+02	1.00E-05	NO
Phenol	108-95-2	.01450	9.590	4.69E+04	0.00E+00	NO
Dimethylphthalate	131-11-3	.01160	8.730	7.82E+05	0.00E+00	NO
Diethylphthalate	84-66-2	.01540	10.20	6.26E+04	0.00E+00	NO
Dibutyl phthalate	84-74-2	.01210	14.0	7.82E+03	0.00E+00	NO
Butylbenzylphthalate	85-68-7	.007870	15.10	1.56E+04	0.00E+00	NO
Benzyl alcohol	100-51-6	.02140	26.50	2.35E+04	0.00E+00	NO
Benzoic acid	65-85-0	.2180	144.0	3.13E+05	0.00E+00	NO
Anthracene	120-12-7	.01880	12.50	2.35E+04	0.00E+00	NO
4-Nitrophenol	100-02-7	.01550	10.20	4.85E+03	0.00E+00	NO
4-Bromophenyl phenyl ether	101-55-3	.01310	8.660	4.54E+03	0.00E+00	NO
2-Methylphenol(o-cresol)	95-48-7	.007870	7.060	3.91E+03	0.00E+00	NO
2-Chloronaphthalene	91-58-7	.01840	12.20	6.26E+03	0.00E+00	NO
2,4,5-Trichlorophenol	95-95-4	.0110	7.280	7.82E+03	0.00E+00	NO
1,3-Dichlorobenzene	541-73-1	.01020	10.30	6.96E+03	0.00E+00	NO
1,2-Dichlorobenzene	95-50-1	.009120	10.40	7.04E+03	0.00E+00	NO
trans-1,2-Dichloroethene	156-60-5	.001080	.00620	1.56E+03	0.00E+00	NO
cis-1,2-Dichloroethene	156-59-2	.000893	.005120	7.82E+02	0.00E+00	NO
Vinyl acetate	108-05-4	.000862	.004940	7.82E+04	0.00E+00	NO
Styrene	100-42-5	.000867	.004970	1.56E+04	0.00E+00	NO
Chloroethane	75-00-3	.001070	.006140	3.13E+04	0.00E+00	NO
Chlorobenzene	108-90-7	.000769	.004410	1.56E+03	0.00E+00	NO
Carbon disulfide	75-15-0	.000748	.004290	7.82E+03	0.00E+00	NO
4-Methyl-2-pentanone(MIBK)	108-10-1	.002290	.01310	6.26E+03	0.00E+00	NO
2-Chloroethyl vinyl ether	110-75-8	.000868	.004970	1.96E+03	0.00E+00	NO
1,1-Dichloroethane	75-34-3	.001070	.006140	7.82E+03	0.00E+00	NO
1,1,1-Trichloroethane	71-55-6	.000788	.004520	7.04E+03	0.00E+00	NO
bis(2-Chloroethoxy)methane	111-91-1	.009120	9.590	0.00E+00	0.00E+00	NV[a]
Benzo(g,h,i)perylene	191-24-2	.02180	17.70	0.00E+00	0.00E+00	NV[a]

Table 4B-7
(Continued)

Chemical Name	CAS No.	DL Minimum mg/kg	DL Maximum mg/kg	Screening Level mg/kg	Ratio	Exceeds Screening Level
Acenaphthylene	208-96-8	.0140	9.260	0.00E+00	0.00E+00	NV[a]
4-Chlorophenyl phenyl ether		.007040	15.10	0.00E+00	0.00E+00	NV[a]
4-Chloro-3-methylphenol	59-50-7	.006570	4.340	0.00E+00	0.00E+00	NV[a]
4,6-Dinitro-2-methylphenol		.01250	92.30	0.00E+00	0.00E+00	NV[a]
2-Nitrophenol	88-75-5	.01780	11.80	0.00E+00	0.00E+00	NV[a]
2-Hexanone	591-78-6	.002580	.01480	0.00E+00	0.00E+00	NV[a]

[a] No screening level is given for this chemical in the U.S. EPA Region III Risk-Based Concentration Table.

Table 4B-8

Detection Limit Screening for Groundwater for the Southeast Runway Fuel Spill Site

Chemical Name	CAS No.	DL Minimum mg/L	DL Maximum mg/L	Screening Level mg/L	Ratio	Exceeds Screening Level
Hexachlorobenzene	118-74-1	.000656	.000691	6.59E-06	#######	YES
N-Nitrosodipropylamine	621-64-7	.000896	.000943	9.57E-06	#######	YES
bis(2-Chloroethyl)ether	111-44-4	.000857	.000902	9.59E-06	#######	YES
Dibenz(a,h)anthracene	53-70-3	.000648	.000682	9.17E-06	#######	YES
Benzo(a)pyrene	50-32-8	.000585	.000616	9.17E-06	#######	YES
1,1-Dichloroethene	75-35-4	.000212	.000636	9.54E-06	#######	YES
Hexachlorobutadiene	87-68-3	.001450	.001530	1.35E-04	#######	YES
Hexachlorocyclopentadiene	77-47-4	.002260	.002380	2.19E-04	#######	YES
2,4-Dinitrotoluene	121-14-2	.000991	.001040	9.85E-05	#######	YES
Benzo(a)anthracene	56-55-3	.000762	.000802	9.17E-05	#######	YES
2,6-Dinitrotoluene	606-20-2	.000805	.000847	9.85E-05	#######	YES
Benzo(b)fluoranthene	205-99-2	.000698	.000735	9.17E-05	#######	YES
Indeno(1,2,3-cd)pyrene	193-39-5	.000551	.000580	9.17E-05	#######	YES
3,3'-Dichlorobenzidine	91-94-1	.000647	.000681	1.49E-04	#######	YES
2-Nitroaniline	88-74-4	.000951	.0010	2.19E-04	#######	YES
Vinyl chloride	75-01-4	.000070	.000209	1.91E-05	#######	YES
bis(2-Chloroisopropyl)ether	39638-32-9	.000891	.000938	2.60E-04	#######	YES
cis-1,3-Dichloropropene	542-75-6	.000116	.000348	7.70E-05	#######	YES
Pentachlorophenol	87-86-5	.000834	.000878	5.58E-04	#######	YES
Hexachloroethane	67-72-1	.001020	.001070	7.54E-04	#######	YES
1,1,2,2-Tetrachloroethane	79-34-5	.000071	.000212	5.28E-05	#######	YES
Benzo(k)fluoranthene	207-08-9	.001160	.001220	9.17E-04	#######	YES
Carbon tetrachloride	56-23-5	.000131	.000393	1.62E-04	8.09E-01	NO
Dibromochloromethane	124-48-1	.000087	.000261	1.26E-04	6.93E-01	NO
1,4-Dichlorobenzene	106-46-7	.000216	.000648	4.40E-04	4.91E-01	NO
1,1,2-Trichloroethane	79-00-5	.000068	.000203	1.85E-04	3.66E-01	NO
1,1,1,2-Tetrachloroethane	630-20-6	.000133	.000399	4.06E-04	3.28E-01	NO
1,2-Dichloropropane	78-87-5	.000044	.000132	1.55E-04	2.84E-01	NO
Bromodichloromethane	75-27-4	.000046	.000139	1.76E-04	2.63E-01	NO
Nitrobenzene	98-95-3	.000756	.000796	3.39E-03	2.23E-01	NO
trans-1,3-Dichloropropene	10061-02-6	.000072	.000217	3.83E-04	1.89E-01	NO
2,4,6-Trichlorophenol	88-06-2	.000976	.001030	6.09E-03	1.60E-01	NO
bis(2-Ethylhexyl)phthalate	117-81-7	.000731	.000769	4.78E-03	1.53E-01	NO
Chrysene	218-01-9	.000858	.000903	9.17E-03	9.35E-02	NO
Tribromomethane(Bromoform)	75-25-2	.000136	.000408	2.33E-03	5.84E-02	NO
1,2,4-Trichlorobenzene	120-82-1	.000996	.001050	1.78E-02	5.58E-02	NO
2,4-Dinitrophenol	51-28-5	.002590	.002730	7.30E-02	3.55E-02	NO
4-Nitroaniline	100-01-6	.00120	.001260	1.10E-01	1.10E-02	NO
Isophorone	78-59-1	.000770	.000811	7.05E-02	1.09E-02	NO
2,4-Dichlorophenol	120-83-2	.001090	.001150	1.10E-01	9.95E-03	NO

Table 4B-8
(Continued)

Chemical Name	CAS No.	DL Minimum mg/L	DL Maximum mg/L	Screening Level mg/L	Ratio	Exceeds Screening Level
3-Nitroaniline	99-09-2	.001080	.001140	1.10E-01	9.86E-03	NO
Carbon disulfide	75-15-0	.000190	.000570	2.08E-02	9.15E-03	NO
4-Chloroaniline	106-47-8	.000963	.001010	1.46E-01	6.60E-03	NO
Dibenzofuran	132-64-9	.000865	.000911	1.46E-01	5.92E-03	NO
Bromomethane	74-83-9	.000050	.000150	8.67E-03	5.77E-03	NO
Chlorobenzene	108-90-7	.000205	.000615	3.94E-02	5.20E-03	NO
2-Chlorophenol	95-57-8	.000799	.000841	1.83E-01	4.38E-03	NO
4-Methylphenol/3-Methylphenol	106-44-5	.000753	.000793	1.83E-01	4.13E-03	NO
4-Bromophenyl phenyl ether	101-55-3	.006080	.00640	2.12E+00	2.87E-03	NO
1,2,3-Trichloropropane	96-18-4	.000090	.000271	3.65E-02	2.47E-03	NO
trans-1,2-Dichloroethene	156-60-5	.000212	.000636	1.22E-01	1.74E-03	NO
cis-1,2-Dichloroethene	156-59-2	.000104	.000312	6.08E-02	1.71E-03	NO
2,4-Dimethylphenol	105-67-9	.001030	.001080	7.30E-01	1.41E-03	NO
Diphenylamine (N-Nitrosodiphenylamine)	122-39-4	.000960	.001010	9.13E-01	1.05E-03	NO
2-Chloroethyl vinyl ether	110-75-8	.000131	.000393	1.52E-01	8.60E-04	NO
Pyrene	129-00-0	.000858	.000903	1.10E+00	7.80E-04	NO
2-Butanone(MEK)	78-93-3	.001290	.003870	1.90E+00	6.80E-04	NO
4-Nitrophenol	100-02-7	.001360	.001430	2.26E+00	6.00E-04	NO
Di-n-octylphthalate	117-84-0	.000397	.000418	7.30E-01	5.40E-04	NO
Fluoranthene	206-44-0	.000751	.000791	1.46E+00	5.10E-04	NO
1,2-Dichlorobenzene	95-50-1	.000182	.000546	3.70E-01	4.90E-04	NO
1,3-Dichlorobenzene	541-73-1	.000228	.000684	5.41E-01	4.20E-04	NO
2-Methylphenol(o-cresol)	95-48-7	.00070	.000737	1.83E+00	3.80E-04	NO
2-Chloronaphthalene	91-58-7	.000796	.000838	2.92E+00	2.70E-04	NO
2,4,5-Trichlorophenol	95-95-4	.000812	.000855	3.65E+00	2.20E-04	NO
Butylbenzylphthalate	85-68-7	.000962	.001010	7.30E+00	1.30E-04	NO
Styrene	100-42-5	.000184	.000552	1.62E+00	1.10E-04	NO
4-Methyl-2-pentanone(MIBK)	108-10-1	.000316	.000948	2.92E+00	1.10E-04	NO
1,1,1-Trichloroethane	71-55-6	.000120	.000360	1.28E+00	9.00E-05	NO
Trichlorofluoromethane	75-69-4	.00010	.00030	1.29E+00	8.00E-05	NO
1,1-Dichloroethane	75-34-3	.000065	.000194	8.11E-01	8.00E-05	NO
Anthracene	120-12-7	.000751	.000791	1.10E+01	7.00E-05	NO
Benzoic acid	65-85-0	.006030	.006350	1.46E+02	4.00E-05	NO
Diethylphthalate	84-66-2	.000962	.001010	2.92E+01	3.00E-05	NO
Phenol	108-95-2	.000416	.000438	2.19E+01	2.00E-05	NO
Vinyl acetate	108-05-4	.000381	.001140	3.65E+01	1.00E-05	NO
Dimethylphthalate	131-11-3	.000808	.000851	3.65E+02	#######	NO
bis(2-Chloroethoxy)methane	111-91-1	.000967	.001020	0.00E+00	#######	NV[a]
Benzo(g,h,i)perylene	191-24-2	.000676	.000712	0.00E+00	#######	NV[a]
Acenaphthylene	208-96-8	.000880	.000926	0.00E+00	#######	NV[a]
4-Chlorophenyl phenyl ether		.000985	.001040	0.00E+00	#######	NV[a]
4-Chloro-3-methylphenol	59-50-7	.000866	.000912	0.00E+00	#######	NV[a]

Table 4B-8
(Continued)

Chemical Name	CAS No.	DL Minimum mg/L	DL Maximum mg/L	Screening Level mg/L	Ratio	Exceeds Screening Level
4,6-Dinitro-2-methylphenol		.001060	.001120	0.00E+00	#######	NV[a]
2-Nitrophenol	88-75-5	.000884	.000931	0.00E+00	#######	NV[a]
Bromobenzene	108-86-1	.000167	.000501	0.00E+00	#######	NV[a]
2-Hexanone	591-78-6	.000347	.001040	0.00E+00	#######	NV[a]
1-Chlorohexane		.000357	.001070	0.00E+00	#######	NV[a]

[a] No screening level is given for this chemical in the U.S. EPA Region III Risk-Based Concentration Table.

Table 4B-9

Detection Limit Screening for Surface Soil for the Control Tower Drum Storage Area

Chemical Name	CAS No.	DL Minimum mg/kg	DL Maximum mg/kg	Screening Level mg/kg	Ratio	Exceeds Screening Level
Dibenz(a,h)anthracene	53-70-3	.02620	.030	8.75E-02	2.99E-01	NO
PCB-1242	1336-36-3	.01230	.1240	8.30E-02	1.48E-01	NO
N-Nitrosodipropylamine	621-64-7	.008630	.009890	9.12E-02	9.46E-02	NO
PCB-1260	11096-82-5	.003570	.03610	8.30E-02	4.30E-02	NO
Hexachlorobenzene	118-74-1	.01480	.0170	3.99E-01	3.71E-02	NO
2,6-Dinitrotoluene	606-20-2	.02820	.03230	9.39E-01	3.00E-02	NO
PCB-1221	11104-28-2	.002370	.0240	8.30E-02	2.86E-02	NO
bis(2-Chloroethyl)ether	111-44-4	.01370	.01560	5.81E-01	2.36E-02	NO
PCB-1232	11141-16-5	.001790	.01810	8.30E-02	2.16E-02	NO
2,4-Dinitrotoluene	121-14-2	.0130	.01490	9.39E-01	1.38E-02	NO
2-Nitroaniline	88-74-4	.005880	.006730	4.69E-01	1.25E-02	NO
Toxaphene	8001-35-2	.004370	.04420	5.81E-01	7.53E-03	NO
3,3'-Dichlorobenzidine	91-94-1	.01020	.01170	1.42E+00	7.19E-03	NO
Chlordane	57-74-9	.002450	.02480	4.91E-01	4.99E-03	NO
Vinyl chloride	75-01-4	.000711	.000808	3.36E-01	2.11E-03	NO
PCB-1254	11097-69-1	.003150	.03190	1.56E+00	2.01E-03	NO
Hexachlorobutadiene	87-68-3	.01510	.01730	8.19E+00	1.84E-03	NO
bis(2-Chloroisopropyl)ether	39638-32-9	.01420	.01630	9.12E+00	1.56E-03	NO
Pentachlorophenol	87-86-5	.005880	.006730	5.32E+00	1.10E-03	NO
beta-BHC	319-85-7	.000347	.005320	3.55E-01	9.80E-04	NO
1,4-Dichlorobenzene	106-46-7	.02090	.02390	2.66E+01	7.90E-04	NO
1,1-Dichloroethene	75-35-4	.000743	.000844	1.06E+00	7.00E-04	NO
PCB-1016	12674-11-2	.002490	.02530	5.48E+00	4.50E-04	NO
2,4,6-Trichlorophenol	88-06-2	.02310	.02640	5.81E+01	4.00E-04	NO
1,1,2,2-Tetrachloroethane	79-34-5	.001110	.001260	3.19E+00	3.50E-04	NO
Hexachlorocyclopentadiene	77-47-4	.1850	.2120	5.48E+02	3.40E-04	NO
Hexachloroethane	67-72-1	.01290	.01480	4.56E+01	2.80E-04	NO
Nitrobenzene	98-95-3	.01050	.01210	3.91E+01	2.70E-04	NO
2,4-Dinitrophenol	51-28-5	.04280	.0490	1.56E+02	2.70E-04	NO
cis-1,3-Dichloropropene	542-75-6	.000631	.000716	3.65E+00	1.70E-04	NO
Carbon tetrachloride	56-23-5	.000838	.000952	4.91E+00	1.70E-04	NO
trans-1,3-Dichloropropene	10061-02-6	.000594	.000675	3.65E+00	1.60E-04	NO
1,2-Dichloroethane	107-06-2	.000767	.000872	7.02E+00	1.10E-04	NO
Dibromochloromethane	124-48-1	.000787	.000894	7.60E+00	1.00E-04	NO
Tetrachloroethene	127-18-4	.001010	.001150	1.23E+01	8.00E-05	NO
Dibenzofuran	132-64-9	.02110	.02410	3.13E+02	7.00E-05	NO
Bromodichloromethane	75-27-4	.000768	.000873	1.06E+01	7.00E-05	NO
1,1,2-Trichloroethane	79-00-5	.000805	.000915	1.12E+01	7.00E-05	NO
4-Nitroaniline	100-01-6	.0140	.0160	2.35E+02	6.00E-05	NO
3-Nitroaniline	99-09-2	.01420	.01630	2.35E+02	6.00E-05	NO

Table 4B-9
(Continued)

Chemical Name	CAS No.	DL Minimum mg/kg	DL Maximum mg/kg	Screening Level mg/kg	Ratio	Exceeds Screening Level
1,2-Dichloropropane	78-87-5	.000599	.000681	9.39E+00	6.00E-05	NO
4-Chloroaniline	106-47-8	.01420	.01630	3.13E+02	5.00E-05	NO
2-Chlorophenol	95-57-8	.01530	.01750	3.91E+02	4.00E-05	NO
Benzene	71-43-2	.000852	.000968	2.20E+01	4.00E-05	NO
4-Methylphenol/3-Methylphenol	106-44-5	.01360	.01560	3.91E+02	3.00E-05	NO
2,4-Dichlorophenol	120-83-2	.008050	.009220	2.35E+02	3.00E-05	NO
Isophorone	78-59-1	.01260	.01440	6.72E+02	2.00E-05	NO
Di-n-octylphthalate	117-84-0	.03070	.03520	1.56E+03	2.00E-05	NO
1,2,4-Trichlorobenzene	120-82-1	.01420	.01630	7.82E+02	2.00E-05	NO
Chloromethane	74-87-3	.000928	.001050	4.91E+01	2.00E-05	NO
Naphthalene	91-20-3	.02010	.0230	3.13E+03	1.00E-05	NO
Fluorene	86-73-7	.02170	.02490	3.13E+03	1.00E-05	NO
Diphenylamine (N-Nitrosodiphenylamine)	122-39-4	.01540	.01770	1.96E+03	1.00E-05	NO
2,4-Dimethylphenol	105-67-9	.02210	.02530	1.56E+03	1.00E-05	NO
Trichloroethene	79-01-6	.000737	.000837	5.81E+01	1.00E-05	NO
Tribromomethane(Bromoform)	75-25-2	.000616	.00070	8.09E+01	1.00E-05	NO
Chloroform	67-66-3	.001030	.001170	1.05E+02	1.00E-05	NO
Bromomethane	74-83-9	.001050	.001190	1.10E+02	1.00E-05	NO
Methoxychlor	72-43-5	.005590	.05660	3.91E+02	1.00E-05	NO
Phenol	108-95-2	.01370	.01560	4.69E+04	0.00E+00	NO
Dimethylphthalate	131-11-3	.01240	.01420	7.82E+05	0.00E+00	NO
Diethylphthalate	84-66-2	.01450	.01660	6.26E+04	0.00E+00	NO
Dibutyl phthalate	84-74-2	.01990	.02280	7.82E+03	0.00E+00	NO
Butylbenzylphthalate	85-68-7	.02150	.02460	1.56E+04	0.00E+00	NO
Benzyl alcohol	100-51-6	.03770	.04320	2.35E+04	0.00E+00	NO
Benzoic acid	65-85-0	.2050	.2350	3.13E+05	0.00E+00	NO
Acenaphthene	83-32-9	.01470	.01690	4.69E+03	0.00E+00	NO
4-Nitrophenol	100-02-7	.01460	.01670	4.85E+03	0.00E+00	NO
4-Bromophenyl phenyl ether	101-55-3	.01230	.01410	4.54E+03	0.00E+00	NO
2-Methylphenol(o-cresol)	95-48-7	.01010	.01150	3.91E+03	0.00E+00	NO
2-Chloronaphthalene	91-58-7	.01730	.01990	6.26E+03	0.00E+00	NO
2,4,5-Trichlorophenol	95-95-4	.01040	.01190	7.82E+03	0.00E+00	NO
1,3-Dichlorobenzene	541-73-1	.01470	.01680	6.96E+03	0.00E+00	NO
1,2-Dichlorobenzene	95-50-1	.01470	.01690	7.04E+03	0.00E+00	NO
trans-1,2-Dichloroethene	156-60-5	.001070	.001220	1.56E+03	0.00E+00	NO
o-Xylene	95-47-6	.000689	.000783	1.56E+05	0.00E+00	NO
m&p-Xylenes	108-32-3M	.001520	.001730	1.56E+05	0.00E+00	NO
cis-1,2-Dichloroethene	156-59-2	.000884	.0010	7.82E+02	0.00E+00	NO
Vinyl acetate	108-05-4	.000853	.000969	7.82E+04	0.00E+00	NO
Toluene	108-88-3	.000734	.000834	1.56E+04	0.00E+00	NO
Styrene	100-42-5	.000858	.000975	1.56E+04	0.00E+00	NO
Ethylbenzene	100-41-4	.000643	.000730	7.82E+03	0.00E+00	NO

Table 4B-9
(Continued)

Chemical Name	CAS No.	DL Minimum mg/kg	DL Maximum mg/kg	Screening Level mg/kg	Ratio	Exceeds Screening Level
Chloroethane	75-00-3	.001060	.001210	3.13E+04	0.00E+00	NO
Chlorobenzene	108-90-7	.000761	.000865	1.56E+03	0.00E+00	NO
Carbon disulfide	75-15-0	.000741	.000842	7.82E+03	0.00E+00	NO
Acetone	67-64-1	.004750	.005390	7.82E+03	0.00E+00	NO
4-Methyl-2-pentanone(MIBK)	108-10-1	.002270	.002570	6.26E+03	0.00E+00	NO
2-Chloroethyl vinyl ether	110-75-8	.000859	.000976	1.96E+03	0.00E+00	NO
2-Butanone(MEK)	78-93-3	.003720	.004230	4.69E+04	0.00E+00	NO
1,1-Dichloroethane	75-34-3	.001060	.001210	7.82E+03	0.00E+00	NO
1,1,1-Trichloroethane	71-55-6	.000781	.000887	7.04E+03	0.00E+00	NO
Endosulfan sulfate	1031-07-8	.000556	.005630	4.69E+02	0.00E+00	NO
bis(2-Chloroethoxy)methane	111-91-1	.01370	.01560	0.00E+00	0.00E+00	NV
Acenaphthylene	208-96-8	.01320	.01510	0.00E+00	0.00E+00	NV
4-Chlorophenyl phenyl ether		.02150	.02470	0.00E+00	0.00E+00	NV
4-Chloro-3-methylphenol	59-50-7	.006180	.007080	0.00E+00	0.00E+00	NV
4,6-Dinitro-2-methylphenol		.1310	.1510	0.00E+00	0.00E+00	NV
2-Nitrophenol	88-75-5	.01670	.01920	0.00E+00	0.00E+00	NV
2-Hexanone	591-78-6	.002550	.00290	0.00E+00	0.00E+00	NV
PCB-1248	12672-29-6	.004260	.04320	0.00E+00	0.00E+00	NV
Gasoline Range Organics		1.0	1.0	0.00E+00	0.00E+00	NV

[a] No screening level is given for this chemical in the U.S. EPA Region III Risk-Based Concentration Table.

Table 4B-10

Detection Limit Screening for Groundwater for the Control Tower Drum Storage Area

Chemical Name	CAS No.	DL Minimum mg/L	DL Maximum mg/L	Screening Level mg/L	Ratio	Exceeds Screening Level
Dibenz(a,h)anthracene	53-70-3	.000990	.0010	9.17E-06	1.08E+02	YES
Benzo(a)pyrene	50-32-8	.000786	.000794	9.17E-06	8.57E+01	YES
Hexachlorobenzene	118-74-1	.000545	.000550	6.59E-06	8.27E+01	YES
N-Nitrosodipropylamine	621-64-7	.000610	.000616	9.57E-06	6.38E+01	YES
bis(2-Chloroethyl)ether	111-44-4	.000482	.000487	9.59E-06	5.03E+01	YES
Benzo(b)fluoranthene	205-99-2	.001040	.001050	9.17E-05	1.13E+01	YES
Indeno(1,2,3-cd)pyrene	193-39-5	.000874	.000882	9.17E-05	9.53E+00	YES
1,1-Dichloroethene	75-35-4	.000081	.000081	9.54E-06	8.45E+00	YES
PCB-1232	11141-16-5	.000073	.000074	8.70E-06	8.37E+00	YES
Hexachlorobutadiene	87-68-3	.001020	.001030	1.35E-04	7.54E+00	YES
2,6-Dinitrotoluene	606-20-2	.000737	.000745	9.85E-05	7.48E+00	YES
2,4-Dinitrotoluene	121-14-2	.000676	.000683	9.85E-05	6.86E+00	YES
Benzo(a)anthracene	56-55-3	.000588	.000594	9.17E-05	6.41E+00	YES
3,3'-Dichlorobenzidine	91-94-1	.000885	.000894	1.49E-04	5.95E+00	YES
Hexachlorocyclopentadiene	77-47-4	.001180	.001190	2.19E-04	5.39E+00	YES
Vinyl chloride	75-01-4	.000099	.000099	1.91E-05	5.19E+00	YES
PCB-1260	11096-82-5	.000035	.000036	8.70E-06	4.04E+00	YES
2-Nitroaniline	88-74-4	.000730	.000738	2.19E-04	3.33E+00	YES
PCB-1221	11104-28-2	.000029	.000029	8.70E-06	3.31E+00	YES
1,1,2,2-Tetrachloroethane	79-34-5	.000170	.000170	5.28E-05	3.22E+00	YES
PCB-1242	1336-36-3	.000027	.000027	8.70E-06	3.07E+00	YES
Pentachlorophenol	87-86-5	.000942	.000951	5.58E-04	1.69E+00	YES
bis(2-Chloroisopropyl)ether	39638-32-9	.000438	.000443	2.60E-04	1.68E+00	YES
Benzo(k)fluoranthene	207-08-9	.001090	.00110	9.17E-04	1.19E+00	YES
cis-1,3-Dichloropropene	542-75-6	.000076	.000076	7.70E-05	9.85E-01	NO
1,4-Dichlorobenzene	106-46-7	.000423	.000423	4.40E-04	9.62E-01	NO
Toxaphene	8001-35-2	.000056	.000058	6.09E-05	9.26E-01	NO
Hexachloroethane	67-72-1	.000546	.000551	7.54E-04	7.25E-01	NO
Carbon tetrachloride	56-23-5	.000117	.000117	1.62E-04	7.22E-01	NO
bis(2-Ethylhexyl)phthalate	117-81-7	.002630	.002650	4.78E-03	5.50E-01	NO
1,1,2-Trichloroethane	79-00-5	.000092	.000092	1.85E-04	4.97E-01	NO
1,2-Dichloropropane	78-87-5	.000074	.000074	1.55E-04	4.78E-01	NO
Chlordane	57-74-9	.000020	.000020	5.15E-05	3.86E-01	NO
Bromodichloromethane	75-27-4	.000054	.000054	1.76E-04	3.05E-01	NO
alpha-BHC	319-84-6	.000003	.000003	1.06E-05	2.73E-01	NO
Chloroform	67-66-3	.000036	.000036	1.53E-04	2.37E-01	NO
Dibromochloromethane	124-48-1	.000028	.000028	1.26E-04	2.25E-01	NO
trans-1,3-Dichloropropene	10061-02-6	.000083	.000083	3.83E-04	2.17E-01	NO
1,1,1,2-Tetrachloroethane	630-20-6	.000085	.000085	4.06E-04	2.10E-01	NO
Tetrachloroethene	127-18-4	.000209	.000209	1.07E-03	1.96E-01	NO

Table 4B-10
(Continued)

Chemical Name	CAS No.	DL Minimum mg/L	DL Maximum mg/L	Screening Level mg/L	Ratio	Exceeds Screening Level
Nitrobenzene	98-95-3	.000434	.000439	3.39E-03	1.28E-01	NO
Chrysene	218-01-9	.000980	.000990	9.17E-03	1.07E-01	NO
2,4,6-Trichlorophenol	88-06-2	.000648	.000654	6.09E-03	1.06E-01	NO
Tribromomethane(Bromoform)	75-25-2	.000108	.000108	2.33E-03	4.64E-02	NO
1,2,4-Trichlorobenzene	120-82-1	.000435	.000440	1.78E-02	2.44E-02	NO
4,4'-DDT	50-29-3	.000004	.000013	1.97E-04	1.88E-02	NO
PCB-1254	11097-69-1	.000013	.000013	7.30E-04	1.73E-02	NO
2,4-Dinitrophenol	51-28-5	.001110	.001120	7.30E-02	1.52E-02	NO
PCB-1016	12674-11-2	.000032	.000033	2.56E-03	1.26E-02	NO
Bromomethane	74-83-9	.000097	.000097	8.67E-03	1.12E-02	NO
4,4'-DDD	72-54-8	.000003	.000003	2.79E-04	1.08E-02	NO
4-Nitroaniline	100-01-6	.001080	.001090	1.10E-01	9.86E-03	NO
2,4-Dichlorophenol	120-83-2	.000861	.000869	1.10E-01	7.86E-03	NO
Carbon disulfide	75-15-0	.000161	.000161	2.08E-02	7.76E-03	NO
3-Nitroaniline	99-09-2	.000771	.000778	1.10E-01	7.04E-03	NO
1,2,3-Trichloropropane	96-18-4	.000233	.000233	3.65E-02	6.38E-03	NO
4-Chloroaniline	106-47-8	.000929	.000939	1.46E-01	6.36E-03	NO
Isophorone	78-59-1	.000320	.000323	7.05E-02	4.54E-03	NO
Dibenzofuran	132-64-9	.000548	.000553	1.46E-01	3.75E-03	NO
2-Chlorophenol	95-57-8	.000560	.000565	1.83E-01	3.07E-03	NO
Chlorobenzene	108-90-7	.000112	.000112	3.94E-02	2.84E-03	NO
4-Methylphenol/3-Methylphenol	106-44-5	.000361	.000364	1.83E-01	1.98E-03	NO
Acenaphthene	83-32-9	.000632	.000639	3.65E-01	1.73E-03	NO
2,4-Dimethylphenol	105-67-9	.000798	.000806	7.30E-01	1.09E-03	NO
Diphenylamine (N-Nitrosodiphenylamine)	122-39-4	.000890	.000899	9.13E-01	9.80E-04	NO
1,2-Dichlorobenzene	95-50-1	.000354	.000354	3.70E-01	9.60E-04	NO
2-Chloroethyl vinyl ether	110-75-8	.000124	.000124	1.52E-01	8.20E-04	NO
1,3-Dichlorobenzene	541-73-1	.000391	.000391	5.41E-01	7.20E-04	NO
Di-n-octylphthalate	117-84-0	.000510	.000515	7.30E-01	7.00E-04	NO
Endrin	72-20-8	.000008	.000008	1.10E-02	6.90E-04	NO
Pyrene	129-00-0	.00070	.000707	1.10E+00	6.40E-04	NO
Endrin aldehyde	7421-93-4	.000006	.000006	1.10E-02	5.80E-04	NO
Naphthalene	91-20-3	.000764	.000771	1.46E+00	5.20E-04	NO
4-Nitrophenol	100-02-7	.001150	.001160	2.26E+00	5.10E-04	NO
2-Butanone(MEK)	78-93-3	.000890	.000890	1.90E+00	4.70E-04	NO
Fluoranthene	206-44-0	.000583	.000589	1.46E+00	4.00E-04	NO
Fluorene	86-73-7	.000454	.000458	1.46E+00	3.10E-04	NO
Butylbenzylphthalate	85-68-7	.00180	.001820	7.30E+00	2.50E-04	NO
2-Chloronaphthalene	91-58-7	.000650	.000656	2.92E+00	2.20E-04	NO
Methoxychlor	72-43-5	.000040	.000063	1.83E-01	2.20E-04	NO
4-Bromophenyl phenyl ether	101-55-3	.000415	.000419	2.12E+00	2.00E-04	NO
Benzoic acid	65-85-0	.02580	.0260	1.46E+02	1.80E-04	NO

Table 4B-10
(Continued)

Chemical Name	CAS No.	DL Minimum mg/L	DL Maximum mg/L	Screening Level mg/L	Ratio	Exceeds Screening Level
2-Methylphenol(o-cresol)	95-48-7	.000311	.000314	1.83E+00	1.70E-04	NO
4-Methyl-2-pentanone(MIBK)	108-10-1	.000501	.000501	2.92E+00	1.70E-04	NO
2,4,5-Trichlorophenol	95-95-4	.000544	.000550	3.65E+00	1.50E-04	NO
Dibutyl phthalate	84-74-2	.000489	.000494	3.65E+00	1.30E-04	NO
1,1-Dichloroethane	75-34-3	.000089	.000089	8.11E-01	1.10E-04	NO
Endosulfan II	33213-65-9	.000004	.000004	3.65E-02	1.00E-04	NO
Ethylbenzene	100-41-4	.000110	.000110	1.34E+00	8.00E-05	NO
1,1,1-Trichloroethane	71-55-6	.000099	.000099	1.28E+00	8.00E-05	NO
Anthracene	120-12-7	.000755	.000762	1.10E+01	7.00E-05	NO
Trichlorofluoromethane	75-69-4	.000094	.000094	1.29E+00	7.00E-05	NO
Styrene	100-42-5	.000113	.000113	1.62E+00	7.00E-05	NO
Benzyl alcohol	100-51-6	.000532	.000538	1.10E+01	5.00E-05	NO
delta-BHC	319-86-8	.000001	.000002	1.64E-02	5.00E-05	NO
Phenol	108-95-2	.000369	.000372	2.19E+01	2.00E-05	NO
Endosulfan sulfate	1031-07-8	.000005	.000010	2.19E-01	2.00E-05	NO
Diethylphthalate	84-66-2	.000251	.000253	2.92E+01	1.00E-05	NO
o-Xylene	95-47-6	.000124	.000124	1.22E+01	1.00E-05	NO
Chloroethane	75-00-3	.000097	.000097	8.59E+00	1.00E-05	NO
Dimethylphthalate	131-11-3	.000443	.000448	3.65E+02	0.00E+00	NO
Vinyl acetate	108-05-4	.000127	.000127	3.65E+01	0.00E+00	NO
bis(2-Chloroethoxy)methane	111-91-1	.000625	.000632	0.00E+00	0.00E+00	NV[a]
Phenanthrene	85-01-8	.000653	.000659	0.00E+00	0.00E+00	NV[a]
Benzo(g,h,i)perylene	191-24-2	.001120	.001130	0.00E+00	0.00E+00	NV[a]
Acenaphthylene	208-96-8	.000626	.000633	0.00E+00	0.00E+00	NV[a]
4-Chlorophenyl phenyl ether		.000463	.000467	0.00E+00	0.00E+00	NV[a]
4-Chloro-3-methylphenol	59-50-7	.000396	.00040	0.00E+00	0.00E+00	NV[a]
4,6-Dinitro-2-methylphenol		.000972	.000981	0.00E+00	0.00E+00	NV[a]
2-Nitrophenol	88-75-5	.000733	.000741	0.00E+00	0.00E+00	NV[a]
2-Methylnaphthalene	91-57-6	.000575	.000580	0.00E+00	0.00E+00	NV[a]
Bromobenzene	108-86-1	.000165	.000165	0.00E+00	0.00E+00	NV[a]
2-Hexanone	591-78-6	.000766	.000766	0.00E+00	0.00E+00	NV[a]
1-Chlorohexane		.000154	.000154	0.00E+00	0.00E+00	NV[a]
PCB-1248	12672-29-6	.000032	.000032	0.00E+00	0.00E+00	NV[a]

[a] No screening level is given for this chemical in the U.S. EPA Region III Risk-Based Concentration Table.

APPENDIX 4C

GROUNDWATER MODELING

Note: Methodology for conducting groundwater modeling is described in Appendix C (Volume 3).

APPENDIX 4C
LIST OF TABLES

Table 4C-1
Groundwater Modeling Results for the Southeast Runway Fuel Spill Site

ANALYTE	LOCATION	DATE	RESULT (ppb)	SHORELINE Conc. (ppb)	River Conc. within 5ft mixing zone (ppb)	Old Town Galena Concentration (ppb)
1,2-Dichloroethane	MW-04	8/9/95	4.55E+00	2.06E-01	2.54E-05	4.55E-01
2-Methylnaphthalene	MW-01	8/9/95	1.07E+02	2.53E+01	2.45E-03	3.07E+01
Benzene	MW-01	8/9/95	5.85E+01	2.69E-03	4.38E-06	7.17E-02
Benzyl alcohol	MW-04	8/9/95	3.13E+00	7.40E-01	7.17E-05	8.98E-01
Beryllium	MW-01	8/9/95	3.94E+00	9.31E-01	9.02E-05	1.13E+00
Chloroethane	MW-04	8/9/95	5.89E-02	3.50E-07	3.39E-11	1.95E-05
Chloroform	MW-04	8/9/95	3.88E-02	6.60E-03	6.39E-07	9.02E-03
Chloromethane	MW-04	8/9/95	1.19E+00	7.07E-06	2.99E-09	3.95E-04
Dibutyl phthalate	MW-01	8/9/95	5.23E-01	1.24E-01	1.20E-05	1.50E-01
Ethylbenzene	MW-01	8/9/95	2.16E+01	3.79E-01	3.69E-05	1.18E+00
Fluorene	MW-01	8/9/95	1.52E+03	3.59E+02	3.48E-02	4.36E+02
m&p-Xylenes	MW-01	8/9/95	2.84E+01	1.29E+00	1.29E-04	2.84E+00
Naphthalene	MW-01	8/9/95	8.92E+01	2.11E+00	2.05E-04	5.89E+00
o-Xylene	MW-01	8/9/95	1.09E+01	4.95E-01	4.79E-05	1.09E+00
Phenanthrene	MW-01	8/9/95	7.39E-01	3.98E-02	3.85E-06	8.24E-02
Toluene	MW-01	8/9/95	6.01E+00	9.22E-10	4.41E-13	2.36E-06
Trichloroethene	MW-01	8/9/95	2.06E-01	3.40E-02	3.30E-06	4.70E-02

Table 4C-2
Groundwater Modeling Results for the Control Tower Drum Storage Area, South

ANALYTE	LOCATION	DATE	RESULT (ppb)	SHORELINE Conc. (ppb)	River Conc. within 5ft mixing zone (ppb)	Old Town Galena Concentration (ppb)
1,2-Dichloroethane	13-MW-38	9/19/94	6.40E-01	1.04E-03	2.76E-07	1.65E-03
4,4'-DDE	13-MW-38	9/19/94	5.00E-03	2.92E-04	2.37E-10	3.19E-04
Aldrin	13-MW-38	9/19/94	1.77E-02	3.78E-04	3.06E-10	4.59E-04
beta-BHC	13-MW-38	9/19/94	7.10E-03	2.21E-06	3.40E-10	4.18E-06
cis-1,2-Dichloroethene	13-MW-38	9/19/94	2.33E+01	1.53E+00	1.24E-06	1.65E+00
Dibromomethane	13-MW-37	9/19/94	2.10E-01	6.59E-13	1.39E-11	8.67E-12
Dieldrin	13-MW-38	9/19/94	7.90E-03	1.16E-30	2.77E-10	8.09E-28
Endosulfan I	13-MW-38	9/19/94	9.40E-03	5.25E-67	4.26E-73	2.63E-60
gamma-BHC	13-MW-38	9/19/94	1.33E-02	3.41E-06	3.11E-10	6.59E-06
Heptachlor	13-MW-38	9/19/94	3.30E-03	1.05E-110	2.21E-47	2.07E-99
Heptachlor epoxide	13-MW-38	9/19/94	5.55E-02	1.09E-03	1.21E-09	1.34E-03
m&p-Xylene	13-MW-37	9/19/94	7.00E-02	1.13E-04	1.40E-06	1.80E-04
trans-1,2-Dichloroethene	13-MW-38	9/19/94	1.33E+00	8.76E-02	7.09E-08	9.43E-02
Trichloroethene	13-MW-38	9/19/94	9.28E+00	2.73E-01	2.57E-07	3.20E-01

APPENDIX 4D

AIR EMISSIONS ESTIMATING AND DISPERSION MODELING IN AMBIENT AIR

Note: Methodology for estimating air emissions and modeling air dispersion is described in Appendix D (Volume 3).

APPENDIX D
LIST OF FIGURES

APPENDIX D
LIST OF TABLES

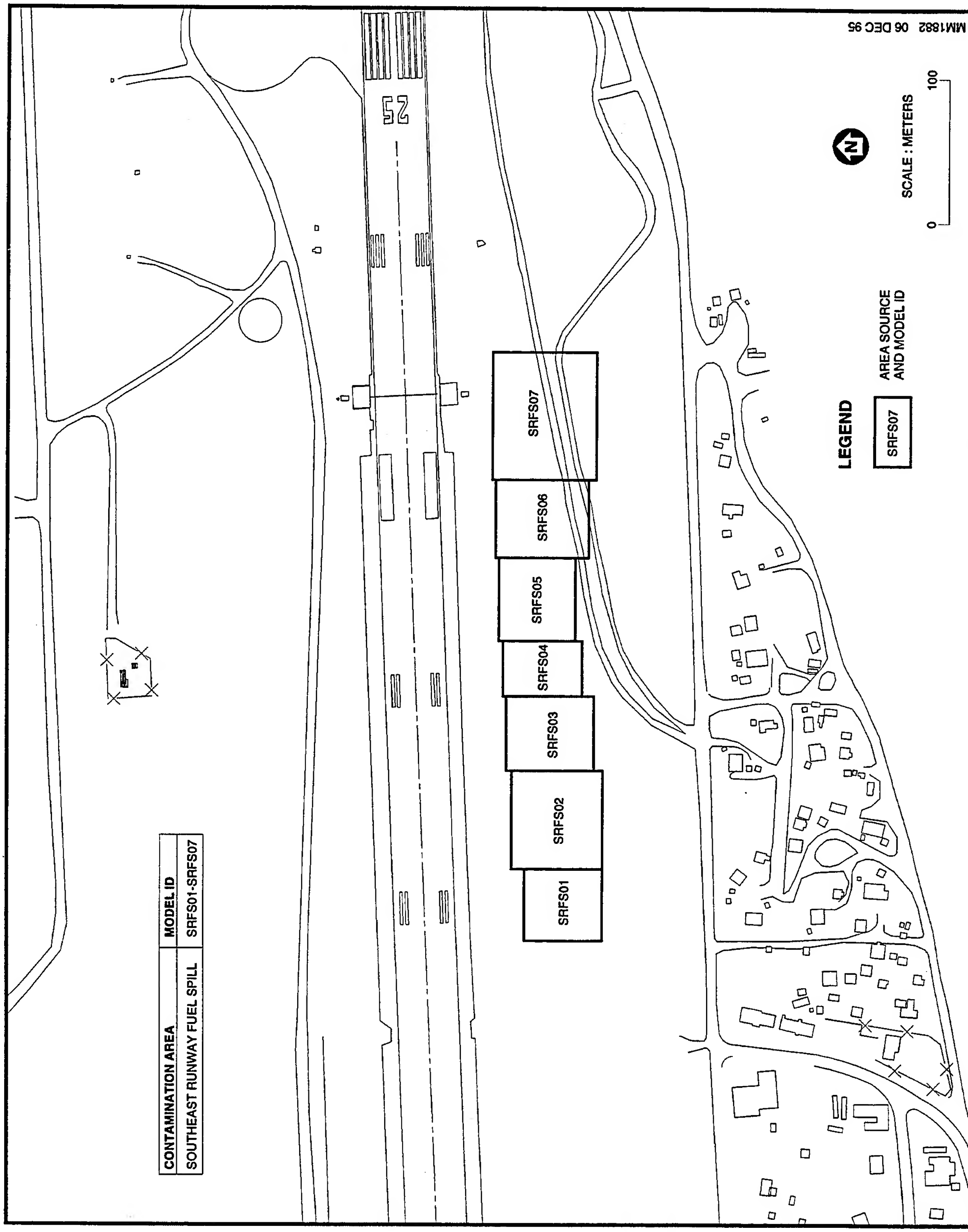

Figure 4D-1 Southeast Runway Fuel Spill Site Sources

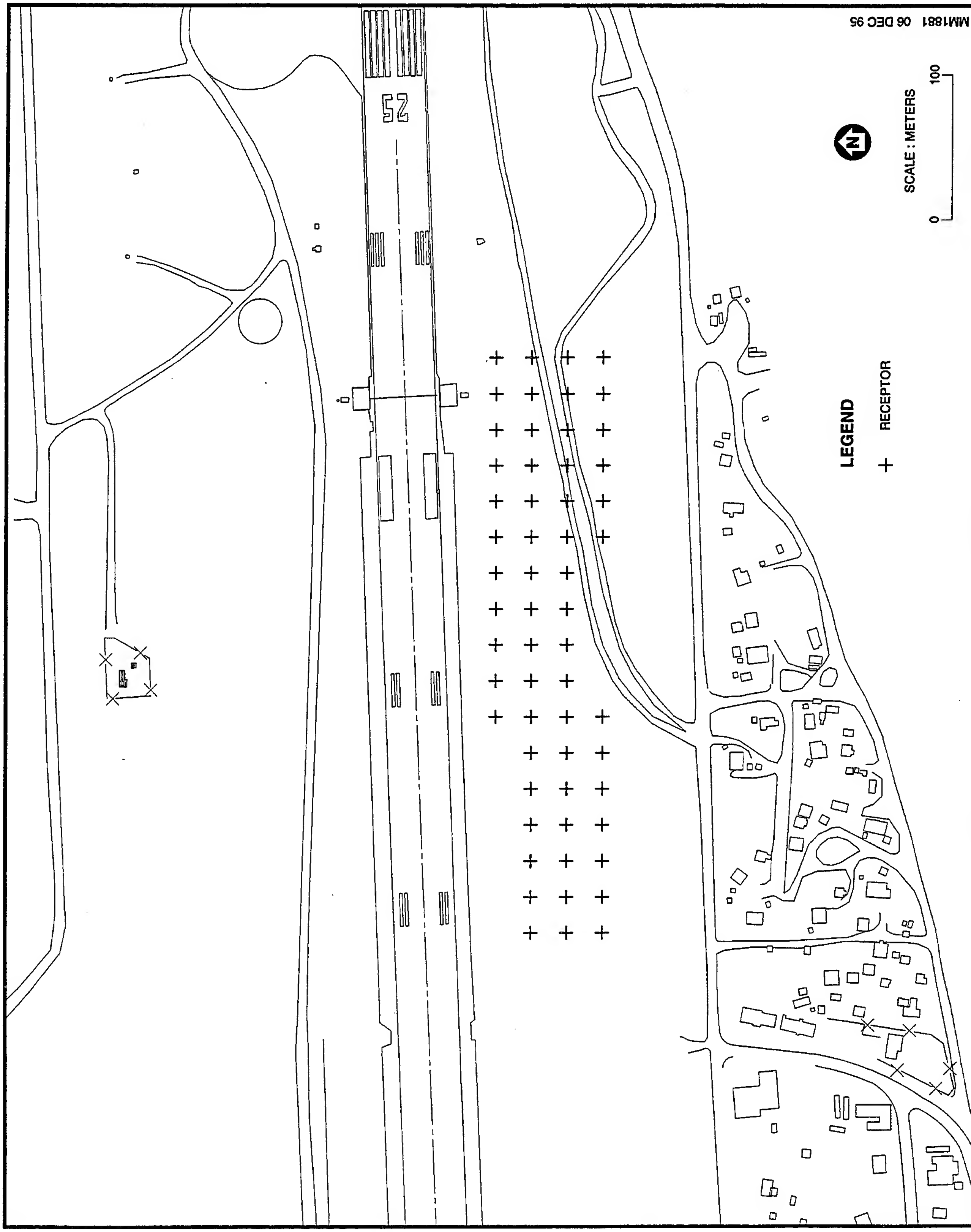

Figure 4D-2 Southeast Ru[illegible]y Fuel Spill Receptors

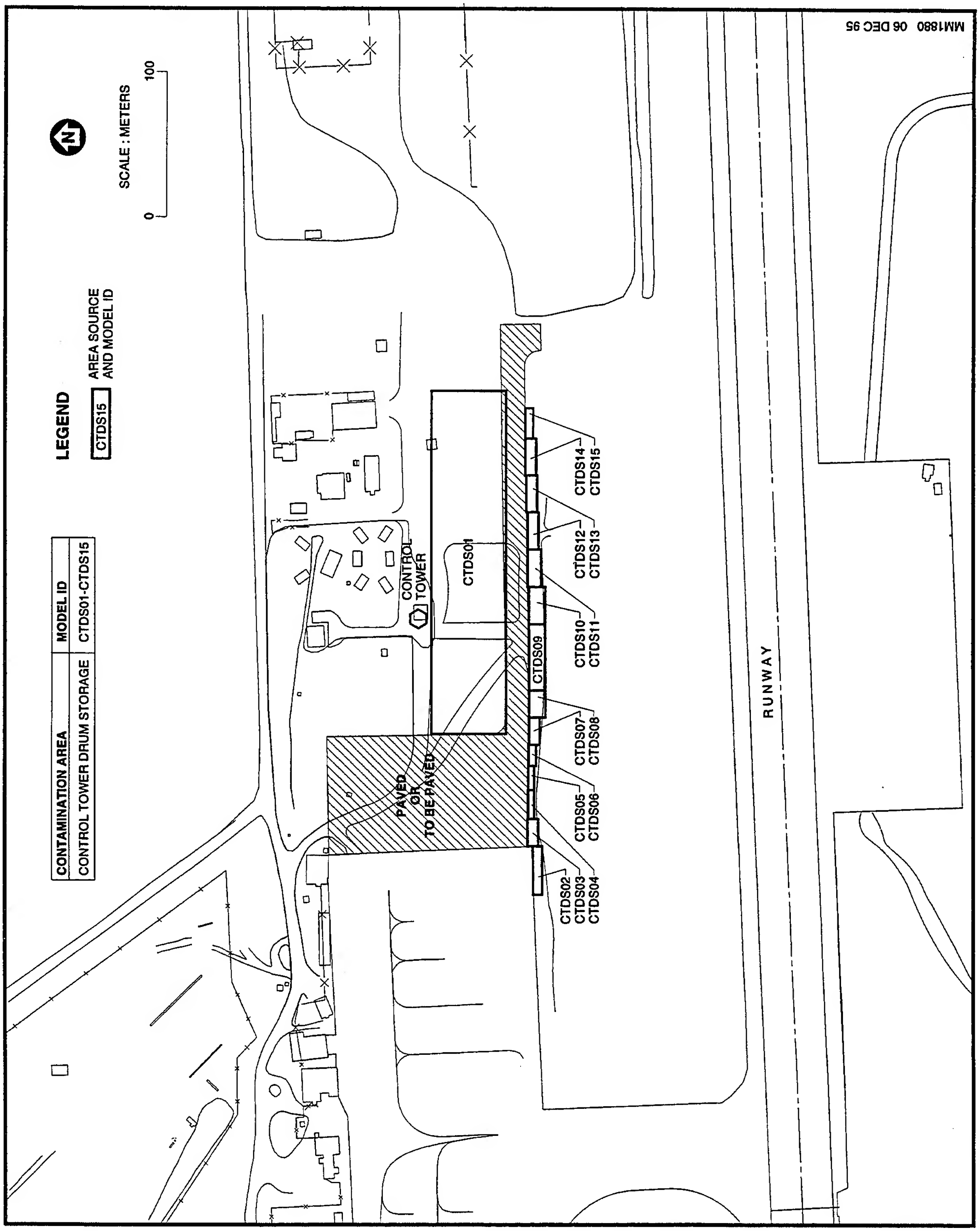

Figure 4D-3 Control Tower Drum Storage Area Sources

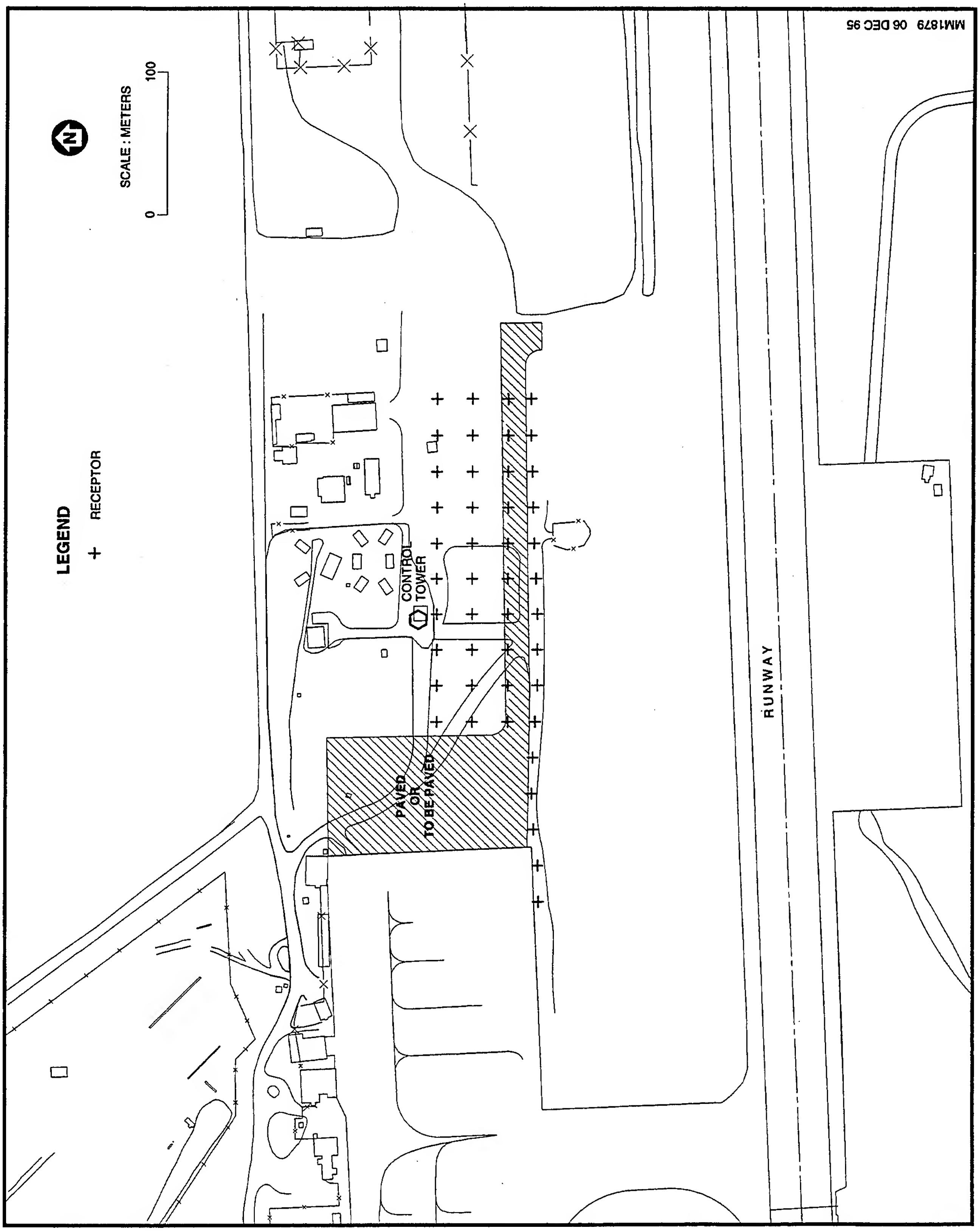

Figure 4D-4 Control Tower Drum Storage Area Receptors

Table 4D-1
Predicted Emission Fluxes (General and Normal Worker Scenarios)

Site	CAS No.	Chemical	Emission Mechanism	Soil Concentration (mg/kg)	Predicted Emissions Flux (gms/sec/m^2)
Control Tower Drum Storage	91-57-6	2-Methylnaphthalene	Dust Emissions	2.30e-02	4.57e-14
Control Tower Drum Storage	50-29-3	4,4'-DDT	Dust Emissions	4.96e-01	9.86e-13
Control Tower Drum Storage	309-00-2	Aldrin	Dust Emissions	5.87e-03	1.17e-14
Control Tower Drum Storage	7440-36-0	Antimony	Dust Emissions	3.90e+01	7.75e-11
Control Tower Drum Storage	50-32-8	Benzo(a)pyrene	Dust Emissions	8.96e-02	1.78e-13
Control Tower Drum Storage	205-99-2	Benzo(b)fluoranthene	Dust Emissions	1.50e-01	2.98e-13
Control Tower Drum Storage	191-24-2	Benzo(g,h,i)perylene	Dust Emissions	7.77e-02	1.54e-13
Control Tower Drum Storage	60-57-1	Dieldrin	Dust Emissions	7.90e-03	1.57e-14
Control Tower Drum Storage	7439-92-1	Lead	Dust Emissions	7.66e+01	1.52e-10
Control Tower Drum Storage	85-01-8	Phenanthrene	Dust Emissions	1.27e-01	2.52e-13
Control Tower Drum Storage	7440-28-0	Thallium	Dust Emissions	2.55e+01	5.07e-11
South Runway Fuel Spill	91-57-6	2-Methylnaphthalene	Dust Emissions	3.12e-02	6.20e-14
South Runway Fuel Spill	56-55-3	Benz(a)anthracene	Dust Emissions	3.13e-01	6.22e-13
South Runway Fuel Spill	50-32-8	Benzo(a)pyrene	Dust Emissions	4.96e-01	9.86e-13
South Runway Fuel Spill	205-99-2	Benzo(b)fluoranthene	Dust Emissions	4.04e-01	8.03e-13
South Runway Fuel Spill	191-24-2	Benzo(g,h,i)perylene	Dust Emissions	1.83e-01	3.64e-13
South Runway Fuel Spill	53-70-3	Dibenz(a,h)anthracene	Dust Emissions	9.30e-02	1.85e-13
South Runway Fuel Spill	193-39-5	Indeno(1,2,3-cd)pyrene	Dust Emissions	2.40e-01	4.77e-13
South Runway Fuel Spill	7439-92-1	Lead	Dust Emissions	5.08e+01	1.01e-10
South Runway Fuel Spill	85-01-8	Phenanthrene	Dust Emissions	1.49e-01	2.96e-13

Table 4D-2
Predicted Emission Fluxes (Construction Scenario)

Site	CAS No.	Chemical	Emission Mechanism	Soil Concentration (mg/kg)	Predicted Emissions Flux (gms/sec/m^2)
Control Tower Drum Storage	91-57-6	2-Methylnaphthalene	Dust Emissions	2.30e-02	2.40e-12
Control Tower Drum Storage	50-29-3	4,4'-DDT	Dust Emissions	4.96e-01	5.18e-11
Control Tower Drum Storage	309-00-2	Aldrin	Dust Emissions	5.87e-03	6.14e-13
Control Tower Drum Storage	7440-36-0	Antimony	Dust Emissions	3.90e+01	4.07e-09
Control Tower Drum Storage	50-32-8	Benzo(a)pyrene	Dust Emissions	8.96e-02	9.35e-12
Control Tower Drum Storage	205-99-2	Benzo(b)fluoranthene	Dust Emissions	1.50e-01	1.57e-11
Control Tower Drum Storage	191-24-2	Benzo(g,h,i)perylene	Dust Emissions	7.77e-02	8.11e-12
Control Tower Drum Storage	60-57-1	Dieldrin	Dust Emissions	7.90e-03	8.25e-13
Control Tower Drum Storage	7439-92-1	Lead	Dust Emissions	7.66e+01	7.99e-09
Control Tower Drum Storage	85-01-8	Phenanthrene	Dust Emissions	1.27e-01	1.33e-11
Control Tower Drum Storage	7440-28-0	Thallium	Dust Emissions	2.55e+01	2.66e-09
South Runway Fuel Spill	91-57-6	2-Methylnaphthalene	Dust Emissions	2.35e+02	2.45e-08
South Runway Fuel Spill	56-55-3	Benz(a)anthracene	Dust Emissions	3.13e-01	3.27e-11
South Runway Fuel Spill	50-32-8	Benzo(a)pyrene	Dust Emissions	4.96e-01	5.18e-11
South Runway Fuel Spill	205-99-2	Benzo(b)fluoranthene	Dust Emissions	4.04e-01	4.22e-11
South Runway Fuel Spill	191-24-2	Benzo(g,h,i)perylene	Dust Emissions	1.83e-01	1.91e-11
South Runway Fuel Spill	53-70-3	Dibenz(a,h)anthracene	Dust Emissions	9.30e-02	9.70e-12
South Runway Fuel Spill	193-39-5	Indeno(1,2,3-cd)pyrene	Dust Emissions	2.40e-01	2.50e-11
South Runway Fuel Spill	7439-92-1	Lead	Dust Emissions	5.08e+01	5.30e-09
South Runway Fuel Spill	85-01-8	Phenanthrene	Dust Emissions	2.32e-01	2.43e-11

Table 4D-3
Maximum Predicted Concentrations for General Exposure Scenario

Site	Chemical	Receptor Class	Maximum Predicted Concentration (μg/m³)
Control Tower Drum Storage	Benzo(g,h,i)perylene	Residential	8.660192e-09
Control Tower Drum Storage	Benzo(b)fluoranthene	Residential	1.671852e-08
Control Tower Drum Storage	Aldrin	Residential	6.542510e-10
Control Tower Drum Storage	4,4'-DDT	Residential	5.528256e-08
Control Tower Drum Storage	Benzo(a)pyrene	Residential	9.986527e-09
Control Tower Drum Storage	Dieldrin	Residential	8.805090e-10
Control Tower Drum Storage	Lead	Residential	8.537589e-06
Control Tower Drum Storage	Thallium	Residential	2.842148e-06
Control Tower Drum Storage	Antimony	Residential	4.346814e-06
Control Tower Drum Storage	Phenanthrene	Residential	1.415501e-08
Control Tower Drum Storage	2-Methylnaphthalene	Residential	2.563506e-09
Control Tower Drum Storage	Benzo(g,h,i)perylene	Dormitory	7.011551e-09
Control Tower Drum Storage	Benzo(b)fluoranthene	Dormitory	1.353581e-08
Control Tower Drum Storage	Aldrin	Dormitory	5.297010e-10
Control Tower Drum Storage	4,4'-DDT	Dormitory	4.475842e-08
Control Tower Drum Storage	Benzo(a)pyrene	Dormitory	8.085392e-09
Control Tower Drum Storage	Dieldrin	Dormitory	7.128860e-10
Control Tower Drum Storage	Lead	Dormitory	6.912288e-06
Control Tower Drum Storage	Thallium	Dormitory	2.301088e-06
Control Tower Drum Storage	Antimony	Dormitory	3.519311e-06
Control Tower Drum Storage	Phenanthrene	Dormitory	1.146032e-08
Control Tower Drum Storage	2-Methylnaphthalene	Dormitory	2.075491e-09
Control Tower Drum Storage	Benzo(g,h,i)perylene	Off Site	4.362451e-08
Control Tower Drum Storage	Benzo(b)fluoranthene	Off Site	8.421720e-08
Control Tower Drum Storage	Aldrin	Off Site	3.295700e-09
Control Tower Drum Storage	4,4'-DDT	Off Site	2.784782e-07
Control Tower Drum Storage	Benzo(a)pyrene	Off Site	5.030574e-08
Control Tower Drum Storage	Dieldrin	Off Site	4.435439e-09
Control Tower Drum Storage	Lead	Off Site	4.300692e-05
Control Tower Drum Storage	Thallium	Off Site	1.431692e-05
Control Tower Drum Storage	Antimony	Off Site	2.189647e-05
Control Tower Drum Storage	Phenanthrene	Off Site	7.130390e-08
Control Tower Drum Storage	2-Methylnaphthalene	Off Site	1.291330e-08

Table 4D-3
(Continued)

Site	Chemical	Receptor Class	Maximum Predicted Concentration (µg/m³)
Control Tower Drum Storage	Benzo(g,h,i)perylene	Old Town	1.383268e-08
Control Tower Drum Storage	Benzo(b)fluoranthene	Old Town	2.670401e-08
Control Tower Drum Storage	Aldrin	Old Town	1.045017e-09
Control Tower Drum Storage	4,4'-DDT	Old Town	8.830126e-08
Control Tower Drum Storage	Benzo(a)pyrene	Old Town	1.595120e-08
Control Tower Drum Storage	Dieldrin	Old Town	1.406411e-09
Control Tower Drum Storage	Lead	Old Town	1.363685e-05
Control Tower Drum Storage	Thallium	Old Town	4.539682e-06
Control Tower Drum Storage	Antimony	Old Town	6.943043e-06
Control Tower Drum Storage	Phenanthrene	Old Town	2.260940e-08
Control Tower Drum Storage	2-Methylnaphthalene	Old Town	4.094615e-09
Control Tower Drum Storage	Benzo(g,h,i)perylene	New Town	5.334340e-10
Control Tower Drum Storage	Benzo(b)fluoranthene	New Town	1.029795e-09
Control Tower Drum Storage	Aldrin	New Town	4.029900e-11
Control Tower Drum Storage	4,4'-DDT	New Town	3.405189e-09
Control Tower Drum Storage	Benzo(a)pyrene	New Town	6.151310e-10
Control Tower Drum Storage	Dieldrin	New Town	5.423600e-11
Control Tower Drum Storage	Lead	New Town	5.258820e-07
Control Tower Drum Storage	Thallium	New Town	1.750652e-07
Control Tower Drum Storage	Antimony	New Town	2.677467e-07
Control Tower Drum Storage	Phenanthrene	New Town	8.718930e-10
Control Tower Drum Storage	2-Methylnaphthalene	New Town	1.579020e-10
South Runway Fuel Spill	Benzo(g,h,i)perylene	Residential	5.469160e-09
South Runway Fuel Spill	Indeno(1,2,3-cd)pyrene	Residential	7.172669e-09
South Runway Fuel Spill	Benzo(b)fluoranthene	Residential	1.207399e-08
South Runway Fuel Spill	Benzo(a)pyrene	Residential	1.482352e-08
South Runway Fuel Spill	Dibenz(a,h)anthracene	Residential	2.779409e-09
South Runway Fuel Spill	Benz(a)anthracene	Residential	9.354355e-09
South Runway Fuel Spill	Lead	Residential	1.518215e-06
South Runway Fuel Spill	Phenanthrene	Residential	4.453032e-09
South Runway Fuel Spill	2-Methylnaphthalene	Residential	9.324470e-10
South Runway Fuel Spill	Benzo(g,h,i)perylene	Dormitory	4.787879e-09
South Runway Fuel Spill	Indeno(1,2,3-cd)pyrene	Dormitory	6.279186e-09
South Runway Fuel Spill	Benzo(b)fluoranthene	Dormitory	1.056996e-08
South Runway Fuel Spill	Benzo(a)pyrene	Dormitory	1.297698e-08

Table 4D-3
(Continued)

Site	Chemical	Receptor Class	Maximum Predicted Concentration (µg/m³)
South Runway Fuel Spill	Dibenz(a,h)anthracene	Dormitory	2.433184e-09
South Runway Fuel Spill	Benz(a)anthracene	Dormitory	8.189105e-09
South Runway Fuel Spill	Lead	Dormitory	1.329094e-06
South Runway Fuel Spill	Phenanthrene	Dormitory	3.898328e-09
South Runway Fuel Spill	2-Methylnaphthalene	Dormitory	8.162940e-10
South Runway Fuel Spill	Benzo(g,h,i)perylene	Off Site	7.236197e-07
South Runway Fuel Spill	Indeno(1,2,3-cd)pyrene	Off Site	9.490095e-07
South Runway Fuel Spill	Benzo(b)fluoranthene	Off Site	1.597499e-06
South Runway Fuel Spill	Benzo(a)pyrene	Off Site	1.961286e-06
South Runway Fuel Spill	Dibenz(a,h)anthracene	Off Site	3.677412e-07
South Runway Fuel Spill	Benz(a)anthracene	Off Site	1.237667e-06
South Runway Fuel Spill	Lead	Off Site	2.008737e-04
South Runway Fuel Spill	Phenanthrene	Off Site	5.891767e-07
South Runway Fuel Spill	2-Methylnaphthalene	Off Site	1.233712e-07
South Runway Fuel Spill	Benzo(g,h,i)perylene	Old Town	4.590733e-07
South Runway Fuel Spill	Indeno(1,2,3-cd)pyrene	Old Town	6.020634e-07
South Runway Fuel Spill	Benzo(b)fluoranthene	Old Town	1.013473e-06
South Runway Fuel Spill	Benzo(a)pyrene	Old Town	1.244264e-06
South Runway Fuel Spill	Dibenz(a,h)anthracene	Old Town	2.332996e-07
South Runway Fuel Spill	Benz(a)anthracene	Old Town	7.851910e-07
South Runway Fuel Spill	Lead	Old Town	1.274367e-04
South Runway Fuel Spill	Phenanthrene	Old Town	3.737810e-07
South Runway Fuel Spill	2-Methylnaphthalene	Old Town	7.826824e-08
South Runway Fuel Spill	Benzo(g,h,i)perylene	New Town	3.552262e-09
South Runway Fuel Spill	Indeno(1,2,3-cd)pyrene	New Town	4.658704e-09
South Runway Fuel Spill	Benzo(b)fluoranthene	New Town	7.842153e-09
South Runway Fuel Spill	Benzo(a)pyrene	New Town	9.627989e-09
South Runway Fuel Spill	Dibenz(a,h)anthracene	New Town	1.805248e-09
South Runway Fuel Spill	Benz(a)anthracene	New Town	6.075727e-09
South Runway Fuel Spill	Lead	New Town	9.860924e-07
South Runway Fuel Spill	Phenanthrene	New Town	2.892279e-09
South Runway Fuel Spill	2-Methylnaphthalene	New Town	6.056320e-10

Table 4D-4
Maximum Predicted Concentrations for On-Site Worker Exposure

Site	Chemical	Receptor Class	Maximum Predicted Concentration (µg/m³)
Control Tower Drum Storage	2-Methylnaphthalene	Worker	5.640856e-07
Control Tower Drum Storage	4,4'-DDT	Worker	1.216463e-05
Control Tower Drum Storage	Aldrin	Worker	1.439645e-07
Control Tower Drum Storage	Antimony	Worker	9.564929e-04
Control Tower Drum Storage	Benzo(a)pyrene	Worker	2.197481e-06
Control Tower Drum Storage	Benzo(b)fluoranthene	Worker	3.678819e-06
Control Tower Drum Storage	Benzo(g,h,i)perylene	Worker	1.905628e-06
Control Tower Drum Storage	Dieldrin	Worker	1.937511e-07
Control Tower Drum Storage	Lead	Worker	1.878650e-03
Control Tower Drum Storage	Phenanthrene	Worker	3.114733e-06
Control Tower Drum Storage	Thallium	Worker	6.253992e-04
South Runway Fuel Spill	2-Methylnaphthalene	Worker	7.930388e-07
South Runway Fuel Spill	Benz(a)anthracene	Worker	7.955806e-06
South Runway Fuel Spill	Benzo(a)pyrene	Worker	1.260728e-05
South Runway Fuel Spill	Benzo(b)fluoranthene	Worker	1.026884e-05
South Runway Fuel Spill	Benzo(g,h,i)perylene	Worker	4.651477e-06
South Runway Fuel Spill	Dibenz(a,h)anthracene	Worker	2.363866e-06
South Runway Fuel Spill	Indeno(1,2,3-cd)pyrene	Worker	6.100298e-06
South Runway Fuel Spill	Lead	Worker	1.291230e-03
South Runway Fuel Spill	Phenanthrene	Worker	3.787269e-06

Table 4D-5
Maximum Predicted Concentrations for Six-Month Construction Worker Exposures

Site	Chemical	Receptor Class	Maximum Predicted Concentration (µg/m³)
Control Tower Drum Storage	Heptachlor epoxide	Worker	7.788130e-08
Control Tower Drum Storage	1,2-Dichloroethane	Worker	3.950662e-01
Control Tower Drum Storage	cis-1,2-Dichloroethene	Worker	2.355393e-01
Control Tower Drum Storage	Benzo(g,h,i)perylene	Worker	1.090338e-04
Control Tower Drum Storage	Benzo(b)fluoranthene	Worker	2.104900e-04
Control Tower Drum Storage	Aldrin	Worker	8.262013e-06
Control Tower Drum Storage	beta-BHC	Worker	9.963194e-09
Control Tower Drum Storage	4,4'-DDT	Worker	6.960203e-04
Control Tower Drum Storage	Benzo(a)pyrene	Worker	1.257327e-04
Control Tower Drum Storage	gamma-BHC	Worker	1.866345e-08
Control Tower Drum Storage	Dieldrin	Worker	1.109689e-05
Control Tower Drum Storage	Dibromomethane	Worker	1.039830e-04
Control Tower Drum Storage	Lead	Worker	1.074902e-01
Control Tower Drum Storage	Thallium	Worker	3.578330e-02
Control Tower Drum Storage	Antimony	Worker	5.472740e-02
Control Tower Drum Storage	Heptachlor	Worker	4.630780e-09
Control Tower Drum Storage	Trichloroethene	Worker	9.922819e-02
Control Tower Drum Storage	Phenanthrene	Worker	1.782149e-04
Control Tower Drum Storage	2-Methylnaphthalene	Worker	3.227513e-05
South Runway Fuel Spill	1,2-Dichloroethane	Worker	2.526670e+00
South Runway Fuel Spill	Benzo(g,h,i)perylene	Worker	2.758607e-04
South Runway Fuel Spill	Indeno(1,2,3-cd)pyrene	Worker	3.617845e-04
South Runway Fuel Spill	Benzo(b)fluoranthene	Worker	6.090040e-04
South Runway Fuel Spill	Benzo(a)pyrene	Worker	7.476880e-04
South Runway Fuel Spill	Dibenz(a,h)anthracene	Worker	1.401915e-04
South Runway Fuel Spill	Benz(a)anthracene	Worker	4.718273e-04
South Runway Fuel Spill	Chloroform	Worker	2.739773e-04
South Runway Fuel Spill	Benzene	Worker	5.783262e-01
South Runway Fuel Spill	Chloromethane	Worker	1.446621e-02
South Runway Fuel Spill	Lead	Worker	7.657773e-02
South Runway Fuel Spill	Beryllium	Worker	5.939296e-06
South Runway Fuel Spill	Trichloroethene	Worker	2.365782e-03
South Runway Fuel Spill	Phenanthrene	Worker	3.508390e-04
South Runway Fuel Spill	2-Methylnaphthalene	Worker	3.543964e-01

Table 4D-6
Maximum Predicted Concentrations for Three-Month Construction Worker Exposures

Site	Chemical	Receptor Type	Maximum Predicted Concentration (μg/m³)
Control Tower Drum Storage	Heptachlor epoxide	Worker	7.503356e-08
Control Tower Drum Storage	1,2-Dichloroethane	Worker	3.806205e-01
Control Tower Drum Storage	cis-1,2-Dichloroethene	Worker	2.269267e-01
Control Tower Drum Storage	Benzo(g,h,i)perylene	Worker	1.050470e-04
Control Tower Drum Storage	Benzo(b)fluoranthene	Worker	2.027934e-04
Control Tower Drum Storage	Aldrin	Worker	7.959912e-06
Control Tower Drum Storage	beta-BHC	Worker	9.598888e-09
Control Tower Drum Storage	4,4'-DDT	Worker	6.705702e-04
Control Tower Drum Storage	Benzo(a)pyrene	Worker	1.211353e-04
Control Tower Drum Storage	gamma-BHC	Worker	1.798102e-08
Control Tower Drum Storage	Dieldrin	Worker	1.069113e-05
Control Tower Drum Storage	Dibromomethane	Worker	1.001809e-04
Control Tower Drum Storage	Lead	Worker	1.035598e-01
Control Tower Drum Storage	Thallium	Worker	3.447488e-02
Control Tower Drum Storage	Antimony	Worker	5.272629e-02
Control Tower Drum Storage	Heptachlor	Worker	4.461455e-09
Control Tower Drum Storage	Trichloroethene	Worker	9.559990e-02
Control Tower Drum Storage	Phenanthrene	Worker	1.716984e-04
Control Tower Drum Storage	2-Methylnaphthalene	Worker	3.109499e-05
South Runway Fuel Spill	1,2-Dichloroethane	Worker	2.430281e+00
South Runway Fuel Spill	Benzo(g,h,i)perylene	Worker	2.653370e-04
South Runway Fuel Spill	Indeno(1,2,3-cd)pyrene	Worker	3.479830e-04
South Runway Fuel Spill	Benzo(b)fluoranthene	Worker	5.857713e-04
South Runway Fuel Spill	Benzo(a)pyrene	Worker	7.191648e-04
South Runway Fuel Spill	Dibenz(a,h)anthracene	Worker	1.348434e-04
South Runway Fuel Spill	Benz(a)anthracene	Worker	4.538278e-04
South Runway Fuel Spill	Chloroform	Worker	2.635255e-04
South Runway Fuel Spill	Benzene	Worker	5.562639e-01
South Runway Fuel Spill	Chloromethane	Worker	1.391434e-02
South Runway Fuel Spill	Lead	Worker	7.365639e-02
South Runway Fuel Spill	Beryllium	Worker	5.712720e-06
South Runway Fuel Spill	Trichloroethene	Worker	2.275531e-03
South Runway Fuel Spill	Phenanthrene	Worker	3.374550e-04
South Runway Fuel Spill	2-Methylnaphthalene	Worker	3.408767e-01

APPENDIX 4E

UPTAKE BY FRUIT AND VEGETABLES

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4E.1 INTRODUCTION

Uptake of contaminated shallow groundwater by locally grown vegetables may contribute to concentrations of certain chemicals in edible portions of plants. The concentration of chemicals in plants subirrigated with contaminated water depends on the concentration of the chemical in the shallow groundwater, the water solubility and lipophilicity of the chemical, the plant type, and other factors. Volatile chemicals as well as non-volatile chemicals were evaluated for this pathway at the Southeast Runway Fuel Spill site and Control Tower Drum Storage Area, South (CTDSA). Because the vegetable gardens may take in water through tap roots which access the shallow groundwater, these constituents are not volatilized to the atmosphere via agitation and volatilization that can occur with above ground irrigation.

Currently, Galena residents grow vegetables in gardens southwest of the Southeast Runway Fuel Spill site. Therefore, maximum concentrations of groundwater chemicals of potential concern (COPCs) were taken from wells MW-03 and MW-04 located near the Southeast Runway Fuel Spill site and the gardens. These concentrations were used in the fruit and vegetable uptake model for the current Old Town Galena resident (see Table 4E-1). For the future Old Town Galena resident, modeled groundwater concentrations in Old Town Galena were used in the fruit and vegetable uptake model. See Appendix C (Volume 3) for a discussion of the groundwater modeling and see Appendix 4C of this volume for the groundwater modeling results for the two sites that are the subject of this addendum.

Direct deposition of chemicals from dust and particulates in the air onto the soil and edible parts of fruit and vegetables may also occur. However, the relative contribution to contaminant concentrations in plants by this pathway is expected to be minor in comparison to the contribution by subirrigation with groundwater. The extent of surface contamination at the Southeast Runway Fuel Spill site and the CTDSA is limited to small areas. Moreover, any dust generated at the site is likely to settle to the ground fairly near

the site because of the generally large particle size of dust generated from soil. Also, washing of fruit and vegetables prior to consumption generally removes a large percentage of the deposited dirt and dust. Overall, dust contribution to plant uptake is likely to be insignificant compared to uptake from groundwater, given the extremely conservative methodology used to calculate uptake from groundwater.

4E.2 UPTAKE BY FRUIT AND VEGETABLES SUBIRRIGATED WITH SHALLOW GROUNDWATER

The chemical concentration in fruit and vegetables with roots that take up contaminants directly from the shallow groundwater was derived as follows (USEPA, 1986):

$$C_{ts} = TSCF \times C_w$$

where:

C_{ts} = Concentration in transpiration stream (μg/L);

TSCF = Transpiration stream concentration factor (unitless); and

C_w = Concentration in water (groundwater) (μg/L).

and

$$C_f = (C_{ts} \times WC_p)/1000$$

where:

C_f = Concentration in fruit and vegetables (mg/kg);

WC_p = Water content of plant (%); and

1/1000 = Conversion factor (1 mg/1000 μg $\times$ 1 L/kg).

The transpiration stream concentration factor (TSCF) was calculated as follows (USEPA, 1986):

$$TSCF = 0.784 \exp - [\log K_{ow} - 1.78]^2/(2.44)]$$

Tables 4E-1 through 4E-3 list the calculated TSCF values for chemicals of potential concern in the shallow groundwater.

For water content of plant (WC_p) a mid-range value from the range presented in USEPA (1986) for fruits and green vegetables (0.84) was used to derive an average concentration in fruit and vegetables and the highest value in the range (0.94) was used to derive a reasonable maximum concentration in fruit and vegetables.

Tables 4E-1 through 4E-3 contains the spreadsheet calculations for uptake by fruit and vegetables directly from the shallow groundwater.

4E.3 REFERENCES

U.S. Environmental Protection Agency (USEPA), 1986. *Methods for Assessing Exposure to Chemical Substances, Volume 8: Methods for Assessing Environmental Pathways of Food Contamination.* EPA/560/8-85-008.

Table 4E-1
Modeled Concentrations in Current Old Town Galena Fruit and Vegetables (Cf)

(based on direct subirrigation with shallow groundwater) [a]

Galena Air Force Base - Southeast Runway Fuel Spill Site

Cts = TSCF x Cw where,

Cts = Concentration in transpiration stream (ug/L)
TSCF = Transpiration stream concentration factor
= 0.784 exp -[(log Kow - 1.78)^2/(2.44)]
Cw = Concentration in groundwater (ug/L)

Cf = (Cts x WCp)/1000 where,

Cf = Concentration in fruit and vegetables (mg/kg)
WCp = Water content of plant. For fruits and green vegetables:
Average = 0.84 RME = 0.94 (USEPA 1986)
1/1000 = Conversion factor (mg*L)/(1000ug*kg)

Chemical	Cw (ug/L)		log	TSCF	Cts (ug/L)		WCp		Cf (mg/kg)	
	Average	RME	Kow	(unitless)	Average	RME	Average	RME	Average	RME
1,2-Dichloroethane	4.55E+00	4.55E+00	1.45	1.01	4.60E+00	4.60E+00	0.84	0.94	3.86E-03	4.32E-03
Benzene	5.05E-02	5.05E-02	2.13	1.01	5.11E-02	5.11E-02	0.84	0.94	4.29E-05	4.81E-05
Beryllium [b]	2.74E+00	2.74E+00	0	1.37	3.76E+00	3.76E+00	0.84	0.94	3.16E-03	3.53E-03
Chloroform	3.88E-02	3.88E-02	1.92	1.00	3.89E-02	3.89E-02	0.84	0.94	3.27E-05	3.65E-05
Chloromethane	1.19E+00	1.19E+00	0.91	1.08	1.28E+00	1.28E+00	0.84	0.94	1.08E-03	1.21E-03
Trichloroethene	2.08E-02	2.08E-02	2.42	1.04	2.17E-02	2.17E-02	0.84	0.94	1.82E-05	2.04E-05

[a] United States Environmental Protection Agency (USEPA) 1986. Methods for Assessing Expousre to Chemical Substances. Volume 8 Methods for Assessing Environmental Pathways of Food Contamination. EPA/560/8-85-008.

[b] Beryllium has no log Kow value since it is a metal.

Table 4E-2
Modeled Concentrations in Future Old Town Galena Fruit and Vegetables (Cf)

(based on direct subirrigation with shallow groundwater) [a]

Galena Air Force Base - Southeast Runway Fuel Spill Site

Cts = TSCF x Cw

where,
Cts = Concentration in transpiration stream (ug/L)
TSCF = Transpiration stream concentration factor
= 0.784 exp -[(log Kow - 1.78)^2/(2.44)]
Cw = Concentration in groundwater (ug/L)

Cf = (Cts x WCp)/1000

where,
Cf = Concentration in fruit and vegetables (mg/kg)
WCp = Water content of plant. For fruits and green vegetables:
Average = 0.84 RME = 0.94 (USEPA 1986)
1/1000 = Conversion factor (mg*L)/(1000ug*kg)

Chemical	Cw (ug/L)		log	TSCF	Cts (ug/L)		WCp		Cf (mg/kg)	
	Average	RME	Kow	(unitless)	Average	RME	Average	RME	Average	RME
1,2-Dichloroethane	4.55E-01	4.55E-01	1.45	1.01	4.60E-01	4.60E-01	0.84	0.94	3.86E-04	4.32E-04
Benzene	7.17E-02	7.17E-02	2.13	1.01	7.26E-02	7.26E-02	0.84	0.94	6.10E-05	6.82E-05
Beryllium [b]	1.13E+00	1.13E+00	0	1.37	1.55E+00	1.55E+00	0.84	0.94	1.30E-03	1.46E-03

[a] United States Environmental Protection Agency (USEPA) 1986. Methods for Assessing Expousre to Chemical Substances. Volume 8 Methods for Assessing Environmental Pathways of Food Contamination. EPA/560/8-85-008.

[b] Beryllium has no log Kow value since it is a metal.

Table 4E-3
Modeled Concentrations in Future Old Town Galena Fruits and Vegetables (Cf)

(based on direct subirrigation with shallow groundwater) [a]

Galena Air Force Base - Control Tower Drum Storage Area, South

Cts = TSCF x Cw where,

Cts = Concentration in transpiration stream (ug/L)
TSCF = Transpiration stream concentration factor
= 0.784 exp -[(log Kow - 1.78)^2/(2.44)]
Cw = Concentration in groundwater (ug/L)

Cf = (Cts x WCp)/1000 where,

Cf = Concentration in fruit and vegetables (mg/kg)
WCp = Water content of plant. For fruits and green vegetables:
Average = 0.84 RME = 0.94 (USEPA 1986)
1/1000 = Conversion factor (mg*L)/(1000ug*kg)

Chemical	Cw (ug/L)		log	TSCF	Cts (ug/L)		WCp		Cf (mg/kg)	
	Average	RME	Kow	(unitless)	Average	RME	Average	RME	Average	RME
Aldrin	4.59E-04	4.59E-04	5.68	4.56	2.09E-03	2.09E-03	0.84	0.94	1.76E-06	1.97E-06
Heptachlor epoxide	1.34E-03	1.34E-03	5.4	3.69	4.95E-03	4.95E-03	0.84	0.94	4.16E-06	4.65E-06
Trichloroethene	3.20E-01	3.20E-01	2.42	1.04	3.33E-01	3.33E-01	0.84	0.94	2.80E-04	3.13E-04

[a] United States Environmental Protection Agency (USEPA) 1986. Methods for Assessing Expousre to Chemical Substances. Volume 8 Methods for Assessing Environmental Pathways of Food Contamination. EPA/560/8-85-008.

APPENDIX 4F

AIR INSIDE SHOWER STALL

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4F.1 METHODOLOGY

Use of contaminated water in residences for bathing/showering may contribute concentrations of volatile chemicals in the indoor air. The method used to estimate concentrations in air while showering is based on results of shower volatilization experiments (Andelman, et al., 1986). The experiments involved pumping a tracer chemical (aqueous trichloroethene) solution through an experimental shower chamber and measuring resulting concentrations of the tracer in the air. The experiments revealed the following: 1) The trichloroethene concentration increased in approximately a linear fashion over time; 2) The volatilization was higher at higher water temperatures; and 3) The volatilization rate increased when the height of the shower water drop path increased. The percent volatilization during the experiment ranged from 43 to 79 percent.

A kinetic-mass-balance relationship that predicts concentrations of volatile chemicals in air as a function of time was developed by Andelman (Andelman et al, 1986). The basic mass balance equation is:

$$V_A(dC_A/dt) = (R) - (F_A C_A)$$

where:

V_A = Chamber volume (m^3);

dC_A/dt = Rate of change in concentration in air ($g/m^3/min$);

R = Mass of chemicals volatilized per unit time (g/min);

F_A = Air flow rate (m^3/min); and

C_A = Concentration of a particular volatile compound in air (g/m^3).

and where:

$$R = k(C_w - C_A/H)$$

where:

C_w = Concentration of a particular volatile compound in water (g/m^3);

H = Henry's Law Constant (dimensionless); and

k = Volatilization transfer coefficient (m^3/min).

Since k equals F_w (water flow rate) at complete volatilization and F_A (the air flow rate) is much greater than F_w, k/H can be neglected. Combining these equations and treating k/H as insignificant, the equation reduces to:

$$V_A(dC_A/dt) = (kC_w) - (F_AC_A)$$

Integrating, we get:

$$Ln(1-F_AC_A/kC_w) = -(F_A/V_A)t.$$

This equation is used to predict concentrations as a function of time in the shower. The maximum value for k, the volatilization transfer coefficient, is assumed to be equal to F_w (the water flow rate) at 100% volatilization (Andelman, et al., 1986). In the absence of experimental data, $k=F_w$ will give the worst-case concentration in the shower at different times.

However, Andelman's work with experimental showers showed that the percent of trichloroethene in water that volatilizes is less than 100%, varying from 43 to 79% (Andelman, at al., 1986). The k value (at steady state = C_AF_A/C_w) drops significantly from 100% to between 5% and 15% when the percent volatilization drops from 100% to the range of 43 to 79 percent. For trichloroethene, therefore, it is conservative to assume a k value that is 50% of the maximum value. Since $k=F_w$ is the maximum value for k, corresponding to 100% theoretical volatilization for trichloroethene, 50% of the water flow rate is a justifiable estimate for k.

Experimental data on percent volatilization in showers was not available for all the chemicals of potential concern (COPCs) for this assessment. By considering the relative volatility of a specific chemical compared to the volatility of trichloroethene, k values can be estimated for the COPCs, as

follows:

$$k = 0.5\ F_w\ X\ \frac{VP_c}{VP_{TCE}}$$

where:

VP_c = Vapor pressure of chemical (mm at 48°C); and

VP_{TCE} = Vapor pressure of trichloroethene (which is 200 mm at 48°C).

This approach is applicable to chemicals with vapor pressures lower than the vapor pressure of trichloroethene, as well as chemicals with vapor pressures higher than the vapor pressure of trichloroethene but less than or equal to 400 mm Hg. For chemicals with vapor pressures higher than 400 mm Hg, use of this equation provides an estimate for the k value which is higher than the maximum value ($k=F_w$). For these chemicals, $k=F_w$ was conservatively assumed.

Many factors affect the volatilization of a compound from water to air. These include thermodynamic or physical properties of a chemical, aqueous solubility, vapor pressure, Henry's law constant and diffusivity.

Andelman's work with TCE showed that the percent volatilized varied between 67 to 79%. A relative volatility based on the vapor pressure of less volatile compounds was used to estimate k and then estimate volatilization from water. Henry's law constant was not used for the following reasons:

1. Henry's law constants are difficult to obtain for temperatures other than 25°C. Vapor pressures on the other hand can be easily obtained.

2. Henry's law constant usage in a shower model situation is not appropriate. In a shower, water is sprayed from a shower head at higher temperatures than ambient temperatures. The water usually breaks down into smaller droplets (with a large surface area). Henry's law constant does not account for this situation. Henry's law constants are determined for quiescent water layers. The spraying action in a shower would make more compounds volatilize than in a quiescent state. Vapor pressure is probably more appropriate to use in this situation.

3. By linking the relative volatility to that of TCE, for which data are available, a more realistic estimate for volatilization is obtained. In addition, TCE is very sparingly soluble in water. Therefore, by linking compounds to TCE by use of a relative volatility function, estimates for volatilization are more conservative.

Other assumptions include:

1. Water flow rate = 20 L/min [based on findings of a U.S. Department of Housing and Urban Development survey that the mean and maximum value for water flow rate in showers is between 10 L/min and 30 L/min (Andelman et al, 1989)];

2. Air exchange rate - 1 per hour (a conservative value suggested by Andelman et al., 1989);

3. Dimensions of the shower stall = 5.5 x 3 x 8 ft (volume = 3.736 m^3); and

4. Shower duration = 7 minutes for the average shower duration and 15 minutes for the reasonable maximum (USEPA, 1989).

Tables 4F-1 and 4F-2 present the shower vapor concentrations for both the average and reasonable maximum scenario for the future Galena residents at the Southeast Runway and Control Tower sites.

4F.2 REFERENCES

Andelman, J.B., et. al., 1986. "Inhalation Exposure in Indoor Air to Trichloroethylene." *Environmental Epidemiology*: pp 201-213.

Andelman, J.B., et al., 1989. "Exposure to Volatile Organics from Indoor Uses of Water." In *Proceedings of Symposium on Total Exposure Methodology: A New Horizon*. Las Vegas, Nevada, November 27-30.

U.S. Environmental Protection Agency (USEPA), 1989. *Risk Assessment Guidance for Superfund, Volume 1: Human Health Evaluation Manual, Part A*. EPA/540/1-89/002, December 1989.

Table 4F-1
Shower Vapor Concentrations for Average and Reasonable Maximum Scenario for Future Galena Residents - Control Tower Drum Storage Area, South

		Time in Shower		Groundwater Concentration		Shower Vapor Concentration	
Analyte	@ 48C (mmHg)	Average (min)	Reasonable Maximum (min)	Average (mg/L)	Reasonable Maximum (mg/L)	Average ($\mu g/m^3$)	Reasonable Maximum ($\mu g/m^3$)
Aldrin	0.00046	7	15	4.6E-7	4.6E-7	1.1E-9	3.8E-9
Heptachlor epoxide	2.7	7	15	1.3E-6	1.3E-6	1.7E+4	6.4E-4
Trichloroethene	197	7	15	3.2E-4	3.2E-4	2.9E+0	1.1E+1

Table 4F-2
Shower Vapor Concentrations for Average and Reasonable Maximum Scenario for Future Galena Residents - Southeast Runway Fuel Spill Site

		Time in Shower		Groundwater Concentration		Shower Vapor Concentration	
Analyte	VP @ 48C (mmHg)	Average (min)	Reasonable Maximum (min)	Average (mg/L)	Reasonable Maximum (mg/L)	Average ($\mu g/m^3$)	Reasonable Maximum ($\mu g/m^3$)
Benzene	250	7	15	7.2E-5	7.2E-5	8.2E-1	3.2E+0
1,2-Dichloroethane	214	7	15	4.6E-4	4.6E-4	4.5E+0	1.7E+1

APPENDIX 4G

HUMAN HEALTH EXPOSURE POINT CONCENTRATIONS

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Table 4G-1
Exposure Point Concentrations for the Control Tower Drum Storage Area, South

Analyte	Ambient Air Concentration ($\mu g/m^3$)						Soil Concentrations (mg/kg)	
	On-Base Residents [a,c]	New Town Galena Residents [c]	Boarding School Students [c]	On-Base Workers [b,c]	Construction Workers		On-Base Workers [b,c] (Surface Soil)	Construction Workers [c] (Mixed Soil)
					Average [d]	RME [e]		
Metals								
Antimony	4.3E-06	2.7E-07	3.5E-06	9.6E-04	5.3E-02	5.5E-02	3.9E+01	3.9E+01
Lead	8.5E-06	5.3E-07	6.9E-06	1.9E-03	1.0E-01	1.1E-01	7.7E+01	7.7E+01
Thallium	2.8E-06	1.8E-07	2.3E-06	6.3E-04	3.4E-02	3.6E-02	2.6E+01	2.6E+01
Pesticides								
4,4'-DDT	5.5E-08	3.4E-09	4.5E-08	1.2E-05	6.7E-04	6.9E-04	4.9E-01	4.9E-01
Aldrin	6.5E-10	4.0E-11	5.3E-10	1.4E-07	8.0E-06	8.3E-06	5.9E-03	5.9E-03
Dieldrin	8.8E-10	5.4E-11	7.1E-10	1.9E-07	1.0E-05	1.1E-05	7.9E-03	7.9E-03
PNAs								
2-Methylnaphthalene	2.6E-09	1.6E-10	2.1E-09	5.6E-07	3.1E-05	3.2E-05	2.3E-02	2.3E-02
Benzo(a)pyrene	9.9E-09	6.2E-10	8.1E-09	2.2E-06	1.2E-04	1.3E-04	8.9E-02	8.9E-02
Benzo(b)fluoranthene	1.7E-08	1.0E-09	1.4E-08	3.7E-06	2.0E-04	2.1E-04	1.5E-01	1.5E-01
Benzo(g,h,i)perylene	8.7E-09	5.3E-10	7.0E-09	1.9E-06	1.0E-04	1.1E-04	7.8E-02	7.8E-02
Phenanthrene	1.4E-08	8.7E-10	1.1E-08	3.1E-06	1.7E-04	1.8E-04	1.3E-01	1.3E-01

[a] On-base residents include caretakers and long-term base residents.
[b] On-base workers include both long-term and short-term workers.
[c] Data for average and reasonable maximum scenario are the same.
[d] Concentrations determined after exposure for 3 months.
[e] Concentrations determined after exposure for 6 months.
NOTE: Mixed soil concentrations were determined by taking the higher value of surface or subsurface soil concentrations.
RME = Reasonable maximum

Table G-2
Exposure Point Concentrations for Current and Future Old Town Galena Residents at the Control Tower Storage Area, South

Analyte	Future					Current and Future
	Groundwater [a]	Shower [c] ($\mu g/m^3$)		Fruit and Vegetables [d] (mg/kg)		Ambient Air [b]
	($\mu g/L$)	Average	RME	Average	RME	($\mu g/m^3$)
Metals						
Antimony	--	--	--	--	--	6.9E-06
Lead	--	--	--	--	--	1.4E-05
Thallium	--	--	--	--	--	4.5E-06
Pesticides						
4,4'-DDT	--	--	--	--	--	8.8E-08
Aldrin	4.6E-04	1.1E-09	3.8E-09	1.8E-06	2.0E-06	1.0E-09
Dieldrin	--	--	--	--	--	1.4E-09
Heptachlor epoxide	1.3E-03	1.7E-04	6.4E-04	4.2E-06	4.7E-06	--
PNAs						
2-Methylnaphthalene	--	--	--	--	--	4.1E-09
Benzo(a)pyrene	--	--	--	--	--	1.6E-08
Benzo(b)fluoranthene	--	--	--	--	--	2.7E-08
Benzo(g,h,i)perylene	--	--	--	--	--	1.4E-08
Phenanthrene	--	--	--	--	--	2.3E-08
Volatiles						
Trichloroethene	3.2E-01	2.9E+00	1.1E+01	2.8E-04	3.1E-04	--

-- No value
[a] See Appendix 4C for groundwater modeling results.
[b] See Appendix 4D for air emissions estimating and dispersion modeling in ambient air results.
[c] See Appendix 4F for air inside shower stall calculations, methodology, and modeling results.
[d] See appendix 4E for fruit and vegetable uptake methodology and modeling results.
RME = Reasonable maximum

Table 4G-3
Exposure Point Concentrations for the Southeast Runway Fuel Spill Site

Analyte	Ambient Air Concentration ($\mu g/m^3$)						Soil Concentrations (mg/kg)	
	On-Base Residents [a,c]	New Town Galena Residents [c]	Boarding School Students [c]	On-Base Workers [b,c]	Construction Workers		On-Base Workers [b,c] (Surface Soil)	Construction Workers [c] (Mixed Soil)
					Average [d]	RME [e]		
Metals								
Lead	1.5E-06	9.9E-07	1.3E-06	1.3E-03	7.4E-02	7.7E-02	5.1E+01	5.1E+01
PNAs								
2-Methylnaphthalene	9.3E-10	6.1E-10	8.2E-10	7.9E-07	3.4E-01	3.5E-01	3.1E-02	2.4E+02
Benzo(a)anthracene	9.4E-09	6.1E-09	8.2E-09	7.9E-06	4.5E-04	4.7E-04	3.1E-01	3.1E-01
Benzo(a)pyrene	1.5E-08	9.6E-09	1.3E-08	1.3E-05	7.2E-04	7.5E-04	4.9E-01	4.9E-01
Benzo(b)fluoranthene	1.2E-08	7.8E-09	1.1E-08	1.0E-05	5.9E-04	6.1E-04	4.0E-01	4.0E-01
Benzo(g,h,i)perylene	5.5E-09	3.6E-09	4.8E-09	4.7E-06	2.7E-04	2.8E-04	1.8E-01	1.8E-01
Dibenz(a,h)anthracene	2.8E-09	1.8E-09	2.4E-09	2.4E-06	1.3E-04	1.4E-04	9.3E-02	9.3E-02
Indeno(1,2,3-cd)pyrene	7.2E-09	4.7E-09	6.3E-09	6.1E-06	3.5E-04	3.6E-04	2.4E-01	2.4E-01
Phenanthrene	4.5E-09	2.9E-09	3.9E-09	3.8E-06	3.4E-04	3.5E-04	1.5E-01	2.3E-01

[a] On-base residents include caretakers and long-term base residents.
[b] On-base workers include both long-term and short-term workers.
[c] Data for average and reasonable maximum scenario are the same.
[d] Concentrations determined after exposure for 3 months.
[e] Concentrations determined after exposure for 6 months.
NOTE: Mixed soil concentrations were determined by taking the higher value of surface or subsurface soil concentrations.

Table 4G-4
Exposure Point Concentrations for Current and Future Old Town Galena Residents at the Southeast Runway Spill Site

	Current			Future					Current and Future
	Groundwater [b]	Fruit & Vegetables (mg/kg)		Groundwater [c]	Shower [e] ($\mu g/m^3$)		Fruit and Vegetables [f] (mg/kg)		Ambient Air [d]
Analyte	(μg/L)	Average	RME	(μg/L)	Average	RME	Average	RME	($\mu g/m^3$)
Metals									
Beryllium [a]	2.7E+00	3.2E-03	3.5E-03	1.1E+00	--	--	1.3E-03	1.5E-03	--
Lead	--	--	--	--	--	--	--	--	1.3E-04
PNAs									
2-Methylnaphthalene	--	--	--	--	--	--	--	--	7.8E-08
Benzo(a)anthracene	--	--	--	--	--	--	--	--	7.9E-07
Benzo(a)pyrene	--	--	--	--	--	--	--	--	1.2E-06
Benzo(b)fluoranthene	--	--	--	--	--	--	--	--	1.0E-06
Benzo(g,h,i)perylene	--	--	--	--	--	--	--	--	4.6E-07
Dibenz(a,h)anthracene	--	--	--	--	--	--	--	--	2.3E-07
Indeno(1,2,3-cd)pyrene	--	--	--	--	--	--	--	--	6.0E-07
Phenanthrene	--	--	--	--	--	--	--	--	3.7E-07
Volatiles									
1,2-Dichloroethane	4.5E+00	3.9E-03	4.3E-03	4.6E-01	4.5E+00	1.7E+01	3.9E-04	4.3E-04	--
Benzene	5.1E-02	4.3E-05	4.8E-05	7.2E-02	8.2E-01	3.2E+00	6.1E-05	6.8E-05	--
Chloroform	3.9E-02	3.3E-05	3.7E-05	--	--	--	--	--	--
Chloromethene	1.2E+00	1.1E-03	1.2E-03	--	--	--	--	--	--
Trichloroethene	2.1E-02	1.8E-05	2.0E-05	--	--	--	--	--	--

-- No value
[a] No shower concentrations were derived for beryllium because it does not readily volatilize.
[b] These are groundwater results from wells MW-03 and MW-04 that are close to the gardens and Southeast Runway site. These values are maximum concentrations of groundwater chemicals of potential concern detected in these wells.
[c] See Appendix 4C for groundwater modeling results.
[d] See Appendix 4D for air emissions estimating and dispersion modeling in ambient air results.
[e] See appendix 4F for air inside shower stall calculations, methodology, and modeling results.
[f] See Appendix 4E for fruit and vegetables uptake methodology and modeling results.

APPENDIX 4H

HUMAN HEALTH INTAKE EQUATIONS AND EXPOSURE PARAMETERS

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Table 4H-1
General Parameters

Exposure Parameter	Value		Selection Rationale (Reference)
GENERAL PARAMETERS			
Averaging Time (AT)			
Non-carcinogens	Varies	days	Calculated as ED x 365 days/yr (USUSEPA, 1989a).
Carcinogens	25550	days	Default value = 70 yrs x 365 days/yr (USEPA, 1989a).
Body Weight (BW)			
Adult Residents	70	kg	Default value for adults (USEPA, 1991a).
Child Residents	15	kg	Default value for children (USEPA, 1991a).
All Workers	70	kg	Default value for adults (USEPA, 1991a).
Boarding Students			
- Average	61.2	kg	Calculated mean for high school aged boys and girls 15-18 years old (USEPA, 1989b).
- Reasonable Maximum	48.6	kg	Calculated mean for boys and girls 6-20 years old, elementary through high school (USEPA, 1989b).
Exposure Duration (ED)			
Average			
On-Base Residents			
Short Term	2	yr	Caretaker expected to live on the base from 2 to 5 years.
Long Term - Adult	9	yr	National average time at one residence (USEPA, 1989b).
Long Term - Child	6	yr	Default value (USEPA, 1991a).
Galena Residents			
Adult	24.5	yr	Average length of residency in Galena (ADF&G, 1990).
Child	6	yr	Default value (USEPA, 1991a).
On-Base Workers			
Short Term	2	yr	Caretaker expected to work from 2 to 5 years on the base.
Long Term	25	yr	Default value (USEPA, 1991a).
Construction Workers	0.25	yr	Assumes construction will last 3 to 6 months.
Boarding Students	4	yr	Assumes student attends grades 9-12 at boarding school.
Reasonable Maximum			
On-Base Residents			
Short Term	5	yr	Caretaker expected to live on the base from 2 to 5 years.
Long Term - Adult	25	yr	Default value (USEPA, 1991a).
Long Term - Child	6	yr	Default value; from birth to 6 years (USEPA, 1991a).
Galena Residents			
Adult	70	yr	Based on lifetime residency in Galena.
Child	6	yr	Default value; from birth to 6 years (USEPA, 1991a).
On-Base Workers			
Short Term	5	yr	Caretaker expected to work from 2 to 5 years on the base.
Long Term	25	yr	Default value (USEPA, 1991a).
Construction Workers	0.5	yr	Assumes construction will last 3 to 6 months.
Boarding Students	14	yr	Assumes student attends grades 1-12 at boarding school and repeats two years at same school.

Table 4H-2
Ingestion of Soil

Exposure Parameter	Value		Selection Rationale (Reference)
INGESTION OF SOIL			
Intake (mg/kg-day) = (Cs x IR x F x EF x ED x CF) / (BW x AT)			
Concentration in Soil (Cs)	Varies	mg/kg	Chemical-specific value.
Ingestion Rate (IR)			
Average			
All Workers	50	mg/day	Default value for workers (USEPA, 1991a).
Boarding Students	100	mg/day	Amount consumed by individuals 7 years and older (USEPA, 1991a).
Reasonable Maximum			
Short Term Workers	50	mg/day	Default value for workers (USEPA, 1991a).
Long Term Workers	50	mg/day	Default value for workers (USEPA, 1991a).
Construction Workers	480	mg/day	Default value for construction workers (USEPA, 1991a).
Boarding Students	100	mg/day	Amount consumed by individuals 7 years and older (USEPA, 1991a).
Faction Ingested from Contaminated Source (F)			
Average & Reasonable Maximum			
All Workers	1	unitless	Assumes 100% from contaminated source.
Boarding Students	1	unitless	Assumes 100% from contaminated source.
Exposure Frequency (EF)			
Average			
On-Base Workers	150	day/yr	Assumes 250 work days a year, 100 days (5 months x 20 days/month) of snow cover, and that the snow will prevent direct contact with soil.
Construction Workers	260	day/yr	Number of work days a year. Since the exposure duration (page 1) is 3-6 months, exposure is limited to the days when soil is not snow-covered.
Boarding Students	120	day/yr	Assumes students board for 270 days a year (9 months), 150 days (5 months) of snow cover, and that the snow will prevent direct contact with soil.
Conversion Factor (CF)	0.000001	kg/mg	

Note: (ED), (BW) and (AT) are general parameters. Please refer to page 4H-1 for their values.

Table 4H-3
Ingestion of Groundwater

Exposure Parameter	Value		Selection Rationale (Reference)
INGESTION OF GROUNDWATER**			
Intake (mg/kg-day) = (Cw x IR x EF x ED) / (BW x AT)			
Concentration in Water (Cw)	Varies	mg/L	Chemical-specific value.
Ingestion Rate (IR)			
Average			
Adult Residents	1.4	L/day	Adult average (USEPA, 1989b).
Child Residents	1	L/day	Default value for children (USEPA, 1991a).
Reasonable Maximum			
Adult Residents	2	L/day	Default value for adults (USEPA, 1991a).
Child Residents	1	L/day	Default value for children (USEPA, 1991a).
Exposure Frequency (EF)			
Average			
All Residents	275	day/yr	On average, people spend 75% of their time at home. 75 percent of a full year equals 275 days/year (USEPA, 1991a).
Reasonable Maximum			
All Residents	350	day/yr	Default value; 365 days/year minus 2 weeks vacation (USEPA, 1991a).

** This pathway is only applicable if groundwater modeling shows Old Town Galena to be downgradient of the base.

Note: (ED), (BW) and (AT) are general parameters. Please refer to page 4H-1 for their values.

Table 4H-4
Ingestion of Fruit

Exposure Parameter	Value		Selection Rationale (Reference)
INGESTION OF FRUIT			
Intake (mg/kg-day) = (Cf x IR x F x EF x ED) / (BW x AT)			
Concentration in Fruit (Cf)	Varies	mg/kg	Chemical-specific value.
Ingestion Rate (IR)*			
Average			
Adults	0.17	kg/day	Based on daily intake rate for fruit (Pao *et al*., 1982).
Children	0.13	kg/day	Based on daily intake rate for fruit (Pao *et al*., 1982).
Reasonable Maximum			
Adults	0.24	kg/day	Based on daily intake rate for fruit (Pao *et al*., 1982).
Children	0.19	kg/day	Based on daily intake rate for fruit (Pao *et al*., 1982).
Faction Ingested from Contaminated Source (F)*			
Average	0.2	unitless	Average fraction of fruit eaten that is home grown (USEPA, 1989a).
Reasonable Maximum	0.3	unitless	Worst-case fraction of fruit eaten that is home grown (USEPA, 1989a).
Exposure Frequency (EF)			
Average	275	days/yr	On average, people spend 75% of their time at home. 75 percent of a full year equals 275 days/year (USEPA Region X, 1991b).
Reasonable Maximum	350	days/yr	Default value; 365 days/year minus 2 weeks vacation (USEPA, 1991a).

Note: (ED), (BW) and (AT) are general parameters. Please refer to page 4H-1 for their values.
*** Site specific values for the Galena area, if available, will replace national values.**

Table 4H-5
Ingestion of Vegetables

Exposure Parameter	Value		Selection Rationale (Reference)
INGESTION OF VEGETABLES			
Intake (mg/kg-day) = (Cv x IR x F x EF x ED) / (BW x AT)			
Concentration in Vegetables (Cv)	Varies	mg/kg	Chemical-specific value.
Ingestion Rate (IR)*			
Average			
Adults	0.11	kg/day	Based on daily intake rate for vegetables (Pao *et al*., 1982).
Children	0.18	kg/day	Based on daily intake rate for vegetables (Pao *et al*., 1982).
Reasonable Maximum			
Adults	0.14	kg/day	Based on daily intake rate for vegetables (Pao *et al*., 1982).
Children	0.19	kg/day	Based on daily intake rate for vegetables (Pao *et al*., 1982).
Faction Ingested from Contaminated Source (F)*			
Average	0.25	unitless	Average fraction of vegetables eaten that is home grown (USEPA, 1989a).
Reasonable Maximum	0.4	unitless	Worst-case fraction of vegetables eaten that is home grown (USEPA, 1989a).
Exposure Frequency (EF)			
Average	275	days/yr	On average, people spend 75% of their time at home. 75 percent of a full year equals 275 days/year (USEPA Region X, 1991b).
Reasonable Maximum	350	days/yr	Default value; 365 days/year minus 2 weeks vacation (USEPA, 1991a).

Note: (ED), (BW) and (AT) are general parameters. Please refer to page 4H-1 for their values.
*** Site specific values for the Galena area, if available, will replace national values.**

Table 4H-6
Dermal Contact with Soil

Exposure Parameter	Value		Selection Rationale (Reference)
DERMAL CONTACT WITH SOIL			
Absorbed Dose (mg/kg-day) = (Cs x SA x AF x ABS x EF x ED x CF) / (BW x AT)			
Concentration in Soil (Cs)	Varies	mg/kg	Chemical-specific value.
Skin Surface Area (SA)			
Average			
All Workers	5000	cm^2/day	Recommended value for dermal exposure to soil. Calculated as 25% of the adult mean skin SA (USEPA, 1992).
Boarding Students	4375	cm^2/day	Calculated as 25% of the total SA, 50th percentile value, for males 15 to 18 years old (USEPA, 1992).
Reasonable Maximum			
All Workers	5000	cm^2/day	Recommended value for dermal exposure to soil. Calculated as 25% of the adult mean skin SA (USEPA, 1992).
Boarding Students	3113	cm^2/day	Calculated as 25% of the total SA, 50th percentile value, for males 6 to 19 years old (USEPA, 1992).
Adherence Factor (AF)			
Average	0.6	mg/cm^2	Default value (USEPA Region X, 1991b).
Reasonable Maximum	1	mg/cm^2	Recommended reasonable upper value (USEPA, 1992).
Absorption Factor (ABS)	Varies	unitless	Chemical-specific value.
	1%	unitless	Default value for inorganic chemicals in the absence of specific data.
	10%	unitless	Default value for organic chemicals in the absence of specific data.
Exposure Frequency (EF)			
Average & Reasonable Maximum			
On-Base Workers	150	day/yr	Assumes 250 work days a year, 100 days (5 months x 20 days/month) of snow cover, and that the snow will prevent direct contact with soil.
Construction Workers	260	day/yr	Number of work days a year. Since the exposure duration (page 1) is 3-6 months, exposure is limited to the days when soils are not snow-covered.
Boarding Students	120	day/yr	Assumes students board for 270 days a year (9 months), 150 days (5 months) of snow cover, and that the snow will prevent direct contact with soil.
Conversion Factor (CF)	0.000001	kg/mg	

Note: (ED), (BW) and (AT) are general parameters. Please refer to page 4H-1 for their values.

Table 4H-7
Dermal Contact with Groundwater

Exposure Parameter	Value		Selection Rationale (Reference)
DERMAL CONTACT WITH GROUNDWATER (Bathing)**			
Absorbed Dose (mg/kg-day) = (Cw x SA x PC x ET x EF x ED x CF) / (BW x AT)			
Concentration in Water (Cw)	Varies	mg/L	Chemical-specific value.
Skin Surface Area (SA)			
Average			
Adult Residents	20000	cm^2	Aproximate mean value for adults (USEPA, 1992).
Child Residents	7280	cm^2	50th percentile total body SA for males 3-6 years (USEPA, 1989a).
Reasonable Maximum			
Adult Residents	20000	cm^2	Aproximate mean value for adults (USEPA, 1992).
Child Residents	7280	cm^2	50th percentile total body SA for males 3-6 years (USEPA, 1989a).
Permeability Constant (PC)	Varies	cm/hr	Chemical-specific value.
Exposure Time (ET)			
Average			
All Residents	0.12	hr/day	Median shower time; 7 min/day (USEPA, 1992).
Reasonable Maximum			
All Residents	0.17	hr/day	Recommended reasonable maximum value (USEPA Reg. X, 1991b).
Exposure Frequency (EF)			
Average			
All Residents	275	day/yr	On average, people spend 75% of their time at home. 75% of a full year equals 275 days/year (USEPA, 1991a).
Reasonable Maximum			
All Residents	350	day/yr	Default value (USEPA, 1991a).
Conversion Factor (CF)	0.001	L/cm^3	

** This pathway is only applicable if groundwater modeling shows Old Town Galena to be downgradient of any site.

Note: (ED), (BW) and (AT) are general parameters. Please refer to page 4H-1 for their values.

Table 4H-8
Inhalation of Fugitive Dust / Vapors

Exposure Parameter	Value		Selection Rationale (Reference)
INHALATION OF FUGITIVE DUST/VAPORS			
Effective Air Concentration (mg/m^3) = (Ca x IRD x ET x EF x ED) / (IRE x AT)			
Concentration in Air (Ca)	Varies	mg/m^3	Chemical-specific value.
Breathing Rate During Exposure (IRD)			
Average			
Adult Residents	0.833	m^3/hr	Equivalent to adult rate, 20 m3/day (USEPA, 1991a).
Child Residents	0.5	m^3/hr	Default value for children (USEPA Region III, 1995).
Short Term Workers	0.833	m^3/hr	Equivalent to adult rate, 20 m3/day (USEPA, 1991a).
Long Term Workers	0.833	m^3/hr	Equivalent to adult rate, 20 m3/day (USEPA, 1991a).
Construction Workers	2.5	m^3/hr	Default value for workers (USEPA, 1991a).
Boarding Students	0.833	m^3/hr	Equivalent to adult rate, 20 m3/day (USEPA, 1991a).
Reasonable Maximum			
Adult Residents	0.833	m^3/hr	Equivalent to adult rate, 20 m3/day (USEPA, 1991a).
Child Residents	0.5	m^3/hr	Default value for children (USEPA Region III, 1994).
All Workers	2.5	m^3/hr	Default value for workers (USEPA, 1991a).
Boarding Students	0.833	m^3/hr	Equivalent to adult rate, 20 m3/day (USEPA, 1991a).
Exposure Time (ET)			
Average & Reasonable Maximum			
All Residents	24	hr/day	Indoor and ourdoor air assumed to be equivalent.
All Workers	8	hr/day	Default value (USEPA, 1991a).
Boarding Students	24	hr/day	Indoor and ourdoor air assumed to be equivalent.
Exposure Frequency (EF)			
Average			
All Residents	275	day/yr	On average, people spend 75% of their time at home. 75 percent of a full year equals 275 days/year (USEPA, 1991a).
All Workers	250	day/yr	Assumes a 5 day work week for 50 weeks (USEPA, 1991a).
Boarding Students	270	day/yr	Assumes students board for 270 days a year (9 months).
Reasonable Maximum			
All Residents	350	day/yr	Default value; 365 days/year minus 2 weeks vacation (USEPA, 1991a).
All Workers	250	day/yr	Assumes a 5 day work week for 50 weeks (USEPA, 1991a).
Boarding Students	270	day/yr	Assumes 270 school days a year (9 months).
Daily Breathing Rate (IRD)			
Average & Reasonable Maximum			
Adult Residents	20	m^3/day	Default value for adults (USEPA, 1991a).
Child Residents	12	m^3/day	Default value for children (USEPA Region III, 1995).
All Workers	20	m^3/day	Default value for adults (USEPA, 1991a).
Boarding Students	20	m^3/day	Default value for adults (USEPA, 1991a).

Note: (ED), (BW) and (AT) are general parameters. Please refer to page 4H-1 for their values.

Table 4H-9
Inhalation of Vapors While Showering

Exposure Parameter	Value		Selection Rationale (Reference)
INHALATION OF VAPORS WHILE SHOWERING**			
Effective Air Concentration (mg/m³) = (Ca x BRe x ET x EF x ED) / (BRd x AT)			
Concentration in Air (Ca)	Varies	mg/m^3	Chemical-specific value.
Breathing Rate During Exposure (BRe)			
Average & Reasonable Maximum			
All Residents	0.6	m^3/hr	Inhalation rate for all age groups while showering (USEPA, 1989b).
Exposure Time (ET)			
Average			
All Residents	0.12	hr/day	Median shower time; 7min/day (USEPA, 1992).
Reasonable Maximum			
All Residents	0.17	hr/day	Recommended reasonable maximum value (USEPA Region X, 1991b).
Exposure Frequency (EF)			
Average			
All Residents	275	day/yr	On average, people spend 75% of their time at home. 75 percent of a full year equals 275 days/year (USEPA, 1991a).
Reasonable Maximum			
All Residents	350	day/yr	Default value; 365 days/year minus 2 weeks vacation (USEPA, 1991a).
Daily Breathing Rate (BRd)			
Average & Reasonable Maximum			
Adult Residents	20	m^3/day	Default value for adults (USEPA, 1991a).
Child Residents	12	m^3/day	Default value for children (USEPA Region III, 1995).

** This pathway is only applicable if groundwater modeling shows Old Town Galena to be downgradient of the base.

Note: (ED), (BW) and (AT) are general parameters. Please refer to page 4H-1 for their values.

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APPENDIX 4I

HUMAN HEALTH TOXICITY PROFILES

Note: Toxicity Profiles for all other human health COPCs are in Appendix G (Volume 3)

APPENDIX I
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4I.1 Antimony

Antimony toxicity data in humans is available from both accidental poisonings and occupational exposures. Acute illnesses occurred in 70 people who drank lemonade containing 0.013% antimony. The lemonade contained approximately 36 mg antimony/300 mL lemonade (approximately 0.5 mg/kg for a 70 kg adult). Acute signs of toxicity included stomach pain, colic, nausea, and vomiting. Recovery was complete in three hours to several days (Dunn, 1928; Monier-Williams, 1934).

Occupational exposure has resulted in a variety of toxic effects. Respiratory disorders include pneumonitis, alterations in pulmonary functions, chronic bronchitis, chronic emphysema, inactive tuberculosis, pleural adhesions and irritation. Increases in blood pressure and altered EKG readings, gastrointestinal disorders, dermatitis, and ocular conjunctivitis also have been seen (ATSDR, 1990). Myocardial effects are among the best characterized human health effects associated with antimony. In one study, the no observed effect level (NOEL) for myocardial damage from inhalation exposure was suggested to be approximately 0.5 mg/m^3 (Brieger, 1954). However, the database regarding heart damage is not sufficient to estimate the myocardial NOEL with any confidence. A higher incidence of spontaneous abortion was reported in workers exposed to antimony (Belyaeva, 1967). A high rate of premature deliveries among workers in an antimony smelting and processing plant was also reported (Aiello, 1955).

In a chronic study in rats, a group of 50 males and 50 females received 5 ppm potassium antimony tartrate in water (Schroeder et al., 1970). The growth rates of treated rats were not affected, but males survived 106 fewer days than did controls at median lifespans, and female rats survived 107 fewer days. Nonfasting blood glucose levels were decreased in treated males, and cholesterol levels were altered in both sexes. A decrease in mean heart weight for males was noted. No increase in tumors occurred. The 5 ppm antimony exposure was expressed as 0.35 mg/kg/day by the authors. Because only one level of antimony was administered, a NOEL was not established.

The oral RfD for antimony in IRIS is 4E-04 mg/kg/day. This is based on the chronic study in rats noted above. The uncertainty factor used to derive the RfD for antimony is 1000. This adjusts for interspecies conversion, sensitive individuals, and the use of a LOAEL in place of the NOEL. IRIS confidence in the supporting study was low. Only one species and one dose level were used, and no NOEL was determined. Gross pathology and histopathology were not described well. IRIS confidence in the database was also low. There is no inhalation RfC for antimony. HEAST lists a subchronic oral RfD of 4.00E-04 mg/kg/day. No carcinogenicity data exists in IRIS or HEAST for antimony. The Threshold Limit Value for antimony is 0.5 mg/m^3 (8-hour time weighted average) (ACGIH, 1993-1994).

References

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APPENDIX 4J

HUMAN HEALTH RISK MODEL OUTPUT

Note: Risk estimates that are reported as a zero (0) do not necessarily represent a 0 risk. The number is reported as 0 if there is no toxicity value with which to calculate a risk estimate.

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APPENDIX J
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Table 4J-1
Carcinogenic and Noncarcinogenic Risk Estimates for Adult Current Short-Term On-Base Resident (subchronic) Attributable to Southeast Runway Fuel Spill Site: Average Exposure Scenario

Analyte	Cancer Risk Summary				Non-Cancer Hazard Index Summary			
	Vapor Inhalation	Dust Inhalation	Total Risk	% of Total Risk	Vapor Inhalation	Dust Inhalation	Total Hazard Index	% of Total HI
PNAs	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
2-Methylnaphthalene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Benz(a)anthracene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Benzo(a)pyrene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Benzo(b)fluoranthene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Benzo(g,h,i)perylene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Dibenz(a,h)anthracene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Indeno(1,2,3-cd)pyrene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Phenanthrene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
TOTALS	0.0E+00	0.0E+00	**0.0E+00**	***#DIV/0!***	0.0E+00	0.0E+00	**0.00**	***#DIV/0!***
% of Total Risk or HI	#DIV/0!	#DIV/0!		#DIV/0!	#DIV/0!	#DIV/0!		#DIV/0!

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Table 4J-2

Carcinogenic and Noncarcinogenic Risk Estimates for Adult Current Short-Term On-Base Resident (subchronic) Attributable to Southeast Runway Fuel Spill Site: Reasonable Maximum Exposure Scenario

Analyte	Cancer Risk Summary				Non-Cancer Hazard Index Summary			
	Vapor Inhalation	Dust Inhalation	Total Risk	% of Total Risk	Vapor Inhalation	Dust Inhalation	Total Hazard Index	% of Total HI
PNAs	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
2-Methylnaphthalene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Benz(a)anthracene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Benzo(a)pyrene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Benzo(b)fluoranthene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Benzo(g,h,i)perylene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Dibenz(a,h)anthracene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Indeno(1,2,3-cd)pyrene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Phenanthrene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
TOTALS	0.0E+00	0.0E+00	**0.0E+00**	***#DIV/0!***	0.0E+00	0.0E+00	**0.0E+00**	***#DIV/0!***
% of Total Risk or HI	#DIV/0!	#DIV/0!		#DIV/0!	#DIV/0!	#DIV/0!		#DIV/0!

Table 4J-3
Carcinogenic and Noncarcinogenic Risk Estimates for Child Current Long-Term On-Base Resident (chronic) Attributable to Southeast Runway Fuel Spill Site: Average Exposure Scenario

Analyte	Cancer Risk Summary				Non-Cancer Hazard Index Summary			
	Vapor Inhalation	Dust Inhalation	Total Risk	% of Total Risk	Vapor Inhalation	Dust Inhalation	Total Hazard Index	% of Total HI
PNAs	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
2-Methylnaphthalene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Benz(a)anthracene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Benzo(a)pyrene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Benzo(b)fluoranthene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Benzo(g,h,i)perylene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Dibenz(a,h)anthracene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Indeno(1,2,3-cd)pyrene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Phenanthrene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
TOTALS	0.0E+00	0.0E+00	**0.0E+00**	***#DIV/0!***	0.0E+00	0.0E+00	**0.0E+00**	***#DIV/0!***
% of Total Risk or HI	#DIV/0!	#DIV/0!		#DIV/0!	#DIV/0!	#DIV/0!		#DIV/0!

Table 4J-4
Carcinogenic and Noncarcinogenic Risk Estimates for Child Current Long-Term On-Base Resident (chronic) Attributable to Southeast Runway Fuel Spill Site: Reasonable Maximum Exposure Scenario

Analyte	Cancer Risk Summary				Non-Cancer Hazard Index Summary			
	Vapor Inhalation	Dust Inhalation	Total Risk	% of Total Risk	Vapor Inhalation	Dust Inhalation	Total Hazard Index	% of Total HI
PNAs	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
2-Methylnaphthalene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Benz(a)anthracene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Benzo(a)pyrene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Benzo(b)fluoranthene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Benzo(g,h,i)perylene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Dibenz(a,h)anthracene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Indeno(1,2,3-cd)pyrene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Phenanthrene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
TOTALS	0.0E+00	0.0E+00	**0.0E+00**	***#DIV/0!***	0.0E+00	0.0E+00	**0.0E+00**	***#DIV/0!***
% of Total Risk or HI	#DIV/0!	#DIV/0!		#DIV/0!	#DIV/0!	#DIV/0!		#DIV/0!

Table 4J-5
Carcinogenic and Noncarcinogenic Risk Estimates for Adult Current Long-Term On-Base Resident (chronic) Attributable to Southeast Runway Fuel Spill Site: Average Exposure Scenario

Analyte	Cancer Risk Summary				Non-Cancer Hazard Index Summary			
	Vapor Inhalation	Dust Inhalation	Total Risk	% of Total Risk	Vapor Inhalation	Dust Inhalation	Total Hazard Index	% of Total HI
PNAs	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
2-Methylnaphthalene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Benz(a)anthracene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Benzo(a)pyrene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Benzo(b)fluoranthene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Benzo(g,h,i)perylene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Dibenz(a,h)anthracene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Indeno(1,2,3-cd)pyrene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Phenanthrene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
TOTALS	0.0E+00	0.0E+00	**0.0E+00**	***#DIV/0!***	0.0E+00	0.0E+00	**0.0E+00**	***#DIV/0!***
% of Total Risk or HI	#DIV/0!	#DIV/0!		#DIV/0!	#DIV/0!	#DIV/0!		#DIV/0!

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Table 4J-6
Carcinogenic and Noncarcinogenic Risk Estimates for Adult Current Long-Term On-Base Resident (chronic) Attributable to Southeast Runway Fuel Spill Site: Reasonable Maximum Exposure Scenario

Analyte	Cancer Risk Summary				Non-Cancer Hazard Index Summary			
	Vapor Inhalation	Dust Inhalation	Total Risk	% of Total Risk	Vapor Inhalation	Dust Inhalation	Total Hazard Index	% of Total HI
PNAs	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
2-Methylnaphthalene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Benz(a)anthracene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Benzo(a)pyrene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Benzo(b)fluoranthene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Benzo(g,h,i)perylene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Dibenz(a,h)anthracene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Indeno(1,2,3-cd)pyrene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Phenanthrene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
TOTALS	0.0E+00	0.0E+00	**0.0E+00**	***#DIV/0!***	0.0E+00	0.0E+00	**0.0E+00**	***#DIV/0!***
% of Total Risk or HI	#DIV/0!	#DIV/0!		#DIV/0!	#DIV/0!	#DIV/0!		#DIV/0!

Table 4J-7
Carcinogenic and Noncarcinogenic Risk Estimates for Child Current Old Town Galena Resident (chronic) Attributable to Southeast Runway Fuel Spill Site: Average Exposure Scenario

Analyte	Carcinogenic Risk Summary						
	Air Pathways			Food Pathways		Total Risk	% of Total Risk
	Vapors						
	Outdoor VOCs	Shower VOCs	Dust	Fruit	Vegetables		
Metals							
Beryllium	0	0	0	1.5E-06	2.6E-06	4.2E-06	97.4
PNAs	0	0	0	0	0	0	0.0
2-Methylnaphthalene	0	0	0	0	0	0	0.0
Benz(a)anthracene	0	0	0	0	0	0	0.0
Benzo(a)pyrene	0	0	0	0	0	0	0.0
Benzo(b)fluoranthene	0	0	0	0	0	0	0.0
Benzo(g,h,i)perylene	0	0	0	0	0	0	0.0
Dibenz(a,h)anthracene	0	0	0	0	0	0	0.0
Indeno(1,2,3-cd)pyrene	0	0	0	0	0	0	0.0
Phenanthrene	0	0	0	0	0	0	0.0
Volatiles	0	0	0	0	0	0	0.0
1,2-Dichloroethane	0	0	0	3.9E-08	6.8E-08	1.1E-07	2.5
Benzene	0	0	0	1.4E-10	2.4E-10	3.8E-10	0.0
Chloroform	0	0	0	2.2E-11	3.9E-11	6.1E-11	0.0
Chloromethane	0	0	0	1.6E-09	2.7E-09	4.3E-09	0.1
Trichloroethene	0	0	0	2.2E-11	3.9E-11	6.1E-11	0.0
TOTALS	0.0E+00	0.0E+00	0.0E+00	1.6E-06	2.7E-06	**4.3E-06**	**100**
% of Total Risk or HI	0.0	0.0	0.0	36.6	63.4		100.0

Table 4J-7
(Continued)

Analyte	Non-Carcinogenic Risk Summary						
	Air Pathways			Food Pathways		Hazard Index	% of Total Index
	Vapors						
	Outdoor VOCs	Shower VOCs	Dust	Fruit	Vegetables		
Metals							
Beryllium	0	0	0	8.3E-04	1.4E-03	0.00225	99.0
PNAs	0	0	0	0	0	0.00000	0.0
2-Methylnaphthalene	0	0	0	0	0	0.00000	0.0
Benz(a)anthracene	0	0	0	0	0	0.00000	0.0
Benzo(a)pyrene	0	0	0	0	0	0.00000	0.0
Benzo(b)fluoranthene	0	0	0	0	0	0.00000	0.0
Benzo(g,h,i)perylene	0	0	0	0	0	0.00000	0.0
Dibenz(a,h)anthracene	0	0	0	0	0	0.00000	0.0
Indeno(1,2,3-cd)pyrene	0	0	0	0	0	0.00000	0.0
Phenanthrene	0	0	0	0	0	0.00000	0.0
Volatiles	0	0	0	0	0	0.00000	0.0
1,2-Dichloroethane	0	0	0	0	0	0.00000	0.0
Benzene	0	0	0	0	0	0.00000	0.0
Chloroform	0	0	0	4.3E-06	7.4E-06	0.00001	0.5
Chloromethane	0	0	0	0	0	0.00000	0.0
Trichloroethene	0	0	0	4.0E-06	6.9E-06	0.00001	0.5
TOTALS	0.0E+00	0.0E+00	0.0E+00	8.3E-04	1.4E-03	0.00228	100.0
% of Total Risk or HI	0.0	0.0	0.0	36.6	63.4		100.0

Table 4J-8

Carcinogenic and Noncarcinogenic Risk Estimates for Child Current Old Town Galena Resident (chronic) Attributable to Southeast Runway Fuel Spill Site: Reasonable Maximum Exposure Scenario

Analyte	Carcinogenic Risk Summary						
	Air Pathways			Food Pathways		Total Risk	% of Total Risk
	Vapors						
	Outdoor VOCs	Shower VOCs	Dust	Fruit	Vegetables		
Metals							
Beryllium	0	0	0	4.7E-06	6.3E-06	1.1E-05	97.4
PNAs	0	0	0	0	0	0	0.0
2-Methylnaphthalene	0	0	0	0	0	0	0.0
Benz(a)anthracene	0	0	0	0	0	0	0.0
Benzo(a)pyrene	0	0	0	0	0	0	0.0
Benzo(b)fluoranthene	0	0	0	0	0	0	0.0
Benzo(g,h,i)perylene	0	0	0	0	0	0	0.0
Dibenz(a,h)anthracene	0	0	0	0	0	0	0.0
Indeno(1,2,3-cd)pyrene	0	0	0	0	0	0	0.0
Phenanthrene	0	0	0	0	0	0	0.0
Volatiles	0	0	0	0	0	0	0.0
1,2-Dichloroethane	0	0	0	1.2E-07	1.6E-07	2.9E-07	2.5
Benzene	0	0	0	4.4E-10	5.8E-10	1.0E-09	0.0
Chloroform	0	0	0	7.0E-11	9.3E-11	1.6E-10	0.0
Chloromethane	0	0	0	4.9E-09	6.6E-09	1.1E-08	0.1
Trichloroethene	0	0	0	7.0E-11	9.3E-11	1.6E-10	0.0
TOTALS	0.0E+00	0.0E+00	0.0E+00	4.9E-06	6.5E-06	**1.1E-05**	**100**
% of Total Risk or HI	0.0	0.0	0.0	42.9	57.1		100.0

Table 4J-8
(Continued)

Analyte	Non-Carcinogenic Risk Summary						
	Air Pathways			Food Pathways		Hazard Index	% of Total Index
	Vapors						
	Outdoor VOCs	Shower VOCs	Dust	Fruit	Vegetables		
Metals							
Beryllium	0	0	0	2.6E-03	3.4E-03	0.0060	99.0
PNAs	0	0	0	0	0	0.0000	0.0
2-Methylnaphthalene	0	0	0	0	0	0.0000	0.0
Benz(a)anthracene	0	0	0	0	0	0.0000	0.0
Benzo(a)pyrene	0	0	0	0	0	0.0000	0.0
Benzo(b)fluoranthene	0	0	0	0	0	0.0000	0.0
Benzo(g,h,i)perylene	0	0	0	0	0	0.0000	0.0
Dibenz(a,h)anthracene	0	0	0	0	0	0.0000	0.0
Indeno(1,2,3-cd)pyrene	0	0	0	0	0	0.0000	0.0
Phenanthrene	0	0	0	0	0	0.0000	0.0
Volatiles	0	0	0	0	0	0.0000	0.0
1,2-Dichloroethane	0	0	0	0	0	0.0000	0.0
Benzene	0	0	0	0	0	0.0000	0.0
Chloroform	0	0	0	1.3E-05	1.8E-05	0.0000	0.5
Chloromethane	0	0	0	0	0	0.0000	0.0
Trichloroethene	0	0	0	1.2E-05	1.7E-05	0.0000	0.5
TOTALS	0.0E+00	0.0E+00	0.0E+00	2.6E-03	3.5E-03	0.0061	100.0
% of Total Risk or HI	0.0	0.0	0.0	42.9	57.1		100.0

Table 4J-9
Carcinogenic and Noncarcinogenic Risk Estimates for Adult Current Old Town Galena Resident (chronic) Attributable to Southeast Runway Fuel Spill Site: Average Exposure Scenario

Analyte	Carcinogenic Risk Summary						
	Air Pathways			Food Pathways		Total Risk	% of Total Risk
	Vapors						
	Outdoor VOCs	Shower VOCs	Dust	Fruit	Vegetables		
Metals							
Beryllium	0	0	0	1.7E-06	1.4E-06	3.1E-06	97.4
PNAs	0	0	0	0	0	0	0.0
2-Methylnaphthalene	0	0	0	0	0	0	0.0
Benz(a)anthracene	0	0	0	0	0	0	0.0
Benzo(a)pyrene	0	0	0	0	0	0	0.0
Benzo(b)fluoranthene	0	0	0	0	0	0	0.0
Benzo(g,h,i)perylene	0	0	0	0	0	0	0.0
Dibenz(a,h)anthracene	0	0	0	0	0	0	0.0
Indeno(1,2,3-cd)pyrene	0	0	0	0	0	0	0.0
Phenanthrene	0	0	0	0	0	0	0.0
Volatiles	0	0	0	0	0	0	0.0
1,2-Dichloroethane	0	0	0	4.5E-08	3.6E-08	8.1E-08	2.5
Benzene	0	0	0	1.6E-10	1.3E-10	2.9E-10	0.0
Chloroform	0	0	0	2.6E-11	2.1E-11	4.6E-11	0.0
Chloromethane	0	0	0	1.8E-09	1.5E-09	3.3E-09	0.1
Trichloroethene	0	0	0	2.6E-11	2.1E-11	4.6E-11	0.0
TOTALS	0.0E+00	0.0E+00	0.0E+00	1.8E-06	1.4E-06	**3.2E-06**	**100**
% of Total Risk or HI	0.0	0.0	0.0	55.3	44.7		100.0

Table 4J-9
(Continued)

Analyte	Non-Carcinogenic Risk Summary						
	Air Pathways			Food Pathways		Hazard Index	% of Total Index
	Vapors						
	Outdoor VOCs	Shower VOCs	Dust	Fruit	Vegetables		
Metals							
Beryllium	0	0	0	2.3E-04	1.9E-04	0.0004	99.0
PNAs	0	0	0	0	0	0.0000	0.0
2-Methylnaphthalene	0	0	0	0	0	0.0000	0.0
Benz(a)anthracene	0	0	0	0	0	0.0000	0.0
Benzo(a)pyrene	0	0	0	0	0	0.0000	0.0
Benzo(b)fluoranthene	0	0	0	0	0	0.0000	0.0
Benzo(g,h,i)perylene	0	0	0	0	0	0.0000	0.0
Dibenz(a,h)anthracene	0	0	0	0	0	0.0000	0.0
Indeno(1,2,3-cd)pyrene	0	0	0	0	0	0.0000	0.0
Phenanthrene	0	0	0	0	0	0.0000	0.0
Volatiles	0	0	0	0	0	0.0000	0.0
1,2-Dichloroethane	0	0	0	0	0	0.0000	0.0
Benzene	0	0	0	0	0	0.0000	0.0
Chloroform	0	0	0	1.2E-06	9.7E-07	0.0000	0.5
Chloromethane	0	0	0	0	0	0.0000	0.0
Trichloroethene	0	0	0	1.1E-06	9.0E-07	0.0000	0.5
TOTALS	0.0E+00	0.0E+00	0.0E+00	2.3E-04	1.9E-04	0.0004	100.0
% of Total Risk or HI	0.0	0.0	0.0	55.3	44.7		100.0

Table 4J-10

Carcinogenic and Noncarcinogenic Risk Estimates for Adult Current Old Town Galena Resident (chronic) Attributable to Southeast Runway Fuel Spill Site: Reasonable Maximum Exposure Scenario

Analyte	Carcinogenic Risk Summary						
	Air Pathways			Food Pathways		Total Risk	% of Total Risk
	Vapors						
	Outdoor VOCs	Shower VOCs	Dust	Fruit	Vegetables		
Metals							
Beryllium	0	0	0	1.5E-05	1.2E-05	2.7E-05	97.4
PNAs	0	0	0	0	0	0	0.0
2-Methylnaphthalene	0	0	0	0	0	0	0.0
Benz(a)anthracene	0	0	0	0	0	0	0.0
Benzo(a)pyrene	0	0	0	0	0	0	0.0
Benzo(b)fluoranthene	0	0	0	0	0	0	0.0
Benzo(g,h,i)perylene	0	0	0	0	0	0	0.0
Dibenz(a,h)anthracene	0	0	0	0	0	0	0.0
Indeno(1,2,3-cd)pyrene	0	0	0	0	0	0	0.0
Phenanthrene	0	0	0	0	0	0	0.0
Volatiles	0	0	0	0	0	0	0.0
1,2-Dichloroethane	0	0	0	3.9E-07	3.0E-07	6.9E-07	2.5
Benzene	0	0	0	1.4E-09	1.1E-09	2.4E-09	0.0
Chloroform	0	0	0	2.2E-10	1.7E-10	3.9E-10	0.0
Chloromethane	0	0	0	1.6E-08	1.2E-08	2.8E-08	0.1
Trichloroethene	0	0	0	2.2E-10	1.7E-10	3.9E-10	0.0
TOTALS	0.0E+00	0.0E+00	0.0E+00	1.5E-05	1.2E-05	**2.7E-05**	**100**
% of Total Risk or HI	0.0	0.0	0.0	56.3	43.8		100.0

Table 4J-10
(Continued)

Analyte	Non-Carcinogenic Risk Summary						
	Air Pathways			Food Pathways		Hazard Index	% of Total Index
	Vapors						
	Outdoor VOCs	Shower VOCs	Dust	Fruit	Vegetables		
Metals							
Beryllium	0	0	0	7.0E-04	5.4E-04	0.0012	99.0
PNAs	0	0	0	0	0	0.0000	0.0
2-Methylnaphthalene	0	0	0	0	0	0.0000	0.0
Benz(a)anthracene	0	0	0	0	0	0.0000	0.0
Benzo(a)pyrene	0	0	0	0	0	0.0000	0.0
Benzo(b)fluoranthene	0	0	0	0	0	0.0000	0.0
Benzo(g,h,i)perylene	0	0	0	0	0	0.0000	0.0
Dibenz(a,h)anthracene	0	0	0	0	0	0.0000	0.0
Indeno(1,2,3-cd)pyrene	0	0	0	0	0	0.0000	0.0
Phenanthrene	0	0	0	0	0	0.0000	0.0
Volatiles	0	0	0	0	0	0.0000	0.0
1,2-Dichloroethane	0	0	0	0	0	0.0000	0.0
Benzene	0	0	0	0	0	0.0000	0.0
Chloroform	0	0	0	3.6E-06	2.8E-06	0.0000	0.5
Chloromethane	0	0	0	0	0	0.0000	0.0
Trichloroethene	0	0	0	3.4E-06	2.6E-06	0.0000	0.5
TOTALS	0.0E+00	0.0E+00	0.0E+00	7.0E-04	5.5E-04	0.0013	100.0
% of Total Risk or HI	0.0	0.0	0.0	56.3	43.8		100.0

Table 4J-11
Carcinogenic and Noncarcinogenic Risk Estimates for Child Current New Town Galena Resident (chronic) Attributable to Southeast Runway Fuel Spill Site: Average Exposure Scenario

Analyte	Cancer Risk Summary				Non-Cancer Hazard Index Summary			
	Vapor Inhalation	Dust Inhalation	Total Risk	% of Total Risk	Vapor Inhalation	Dust Inhalation	Total Hazard Index	% of Total HI
PNAs	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
2-Methylnaphthalene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Benz(a)anthracene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Benzo(a)pyrene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Benzo(b)fluoranthene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Benzo(g,h,i)perylene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Dibenz(a,h)anthracene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Indeno(1,2,3-cd)pyrene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Phenanthrene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
TOTALS	0.0E+00	0.0E+00	**0.0E+00**	***#DIV/0!***	0.0E+00	0.0E+00	**0.0E+00**	***#DIV/0!***
% of Total Risk or HI	#DIV/0!	#DIV/0!		#DIV/0!	#DIV/0!	#DIV/0!		#DIV/0!

Table 4J-12
Carcinogenic and Noncarcinogenic Risk Estimates for Child Current New Town Galena Resident (chronic) Attributable to Southeast Runway Fuel Spill Site: Reasonable Maximum Exposure Scenario

Analyte	Cancer Risk Summary				Non-Cancer Hazard Index Summary			
	Vapor Inhalation	Dust Inhalation	Total Risk	% of Total Risk	Vapor Inhalation	Dust Inhalation	Total Hazard Index	% of Total HI
PNAs	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
2-Methylnaphthalene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Benz(a)anthracene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Benzo(a)pyrene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Benzo(b)fluoranthene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Benzo(g,h,i)perylene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Dibenz(a,h)anthracene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Indeno(1,2,3-cd)pyrene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Phenanthrene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
TOTALS	0.0E+00	0.0E+00	**0.0E+00**	***#DIV/0!***	0.0E+00	0.0E+00	**0.0E+00**	***#DIV/0!***
% of Total Risk or HI	#DIV/0!	#DIV/0!		#DIV/0!	#DIV/0!	#DIV/0!		#DIV/0!

Table 4J-13
Carcinogenic and Noncarcinogenic Risk Estimates for Adult Current New Town Galena Resident (chronic) Attributable to Southeast Runway Fuel Spill Site: Average Exposure Scenario

Analyte	Cancer Risk Summary				Non-Cancer Hazard Index Summary			
	Vapor Inhalation	Dust Inhalation	Total Risk	% of Total Risk	Vapor Inhalation	Dust Inhalation	Total Hazard Index	% of Total HI
PNAs	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
2-Methylnaphthalene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Benz(a)anthracene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Benzo(a)pyrene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Benzo(b)fluoranthene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Benzo(g,h,i)perylene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Dibenz(a,h)anthracene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Indeno(1,2,3-cd)pyrene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Phenanthrene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
TOTALS	0.0E+00	0.0E+00	**0.0E+00**	***#DIV/0!***	0.0E+00	0.0E+00	**0.0E+00**	***#DIV/0!***
% of Total Risk or HI	#DIV/0!	#DIV/0!		#DIV/0!	#DIV/0!	#DIV/0!		#DIV/0!

Table 4J-14
Carcinogenic and Noncarcinogenic Risk Estimates for Adult Current New Town Galena Resident (chronic) Attributable to Southeast Runway Fuel Spill Site: Reasonable Maximum Exposure Scenario

Analyte	Cancer Risk Summary				Non-Cancer Hazard Index Summary			
	Vapor Inhalation	Dust Inhalation	Total Risk	% of Total Risk	Vapor Inhalation	Dust Inhalation	Total Hazard Index	% of Total HI
PNAs	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
2-Methylnaphthalene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Benz(a)anthracene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Benzo(a)pyrene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Benzo(b)fluoranthene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Benzo(g,h,i)perylene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Dibenz(a,h)anthracene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Indeno(1,2,3-cd)pyrene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
Phenanthrene	0	0	0	*#DIV/0!*	0	0	0	*#DIV/0!*
TOTALS	0.0E+00	0.0E+00	**0.0E+00**	***#DIV/0!***	0.0E+00	0.0E+00	**0.0E+00**	***#DIV/0!***
% of Total Risk or HI	#DIV/0!	#DIV/0!		#DIV/0!	#DIV/0!	#DIV/0!		#DIV/0!

Table 4J-15
Carcinogenic and Noncarcinogenic Risk Estimates for Current Short-Term On-Base Worker (subchronic) Attributable to Southeast Runway Fuel Spill Site: Average Exposure Scenario

Analyte	Cancer Risk By Pathway						Hazard Index By Pathway					
	Surface Soil Pathways		Inhalation Pathways		Total Risk	% of Total Risk	Surface Soil Pathways		Inhalation Pathways		Hazard Index	% of Total Index
	Dermal Contact	Ingestion	Vapors	Dust			Dermal Contact	Ingestion	Vapors	Dust		
PNAs	0	0	0	0	0	*0.0*	0	0	0	0	0	*#DIV/0!*
2-Methylnaphthalene	0	0	0	0	0	*0.0*	0	0	0	0	0	*#DIV/0!*
Benzo(a)anthracene	0	1.9E-09	0	0	1.9E-09	*4.6*	0	0	0	0	0	*#DIV/0!*
Benzo(a)pyrene	0	3.0E-08	0	0	3.0E-08	*72.4*	0	0	0	0	0	*#DIV/0!*
Benzo(b)fluoranthene	0	2.5E-09	0	0	2.5E-09	*5.9*	0	0	0	0	0	*#DIV/0!*
Benzo(g,h,i)perylene	0	0	0	0	0	*0.0*	0	0	0	0	0	*#DIV/0!*
Dibenz(a,h)anthracene	0	5.7E-09	0	0	5.7E-09	*13.6*	0	0	0	0	0	*#DIV/0!*
Indeno(1,2,3-cd)pyrene	0	1.5E-09	0	0	1.5E-09	*3.5*	0	0	0	0	0	*#DIV/0!*
Phenanthrene	0	0	0	0	0	*0.0*	0	0	0	0	0	*#DIV/0!*
TOTALS	0.0E+00	4.2E-08	0.0E+00	0.0E+00	**4.2E-08**	*100*	0.0E+00	0.0E+00	0.0E+00	0.0E+00	**0.0E+00**	*#DIV/0!*
% of Total Risk or HI	0.0	100.0	0.0	0.0		100.0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		#DIV/0!

Table 4J-16
Carcinogenic and Noncarcinogenic Risk Estimates for Current Short-Term On-Base Worker (subchronic) Attributable to Southeast Runway Fuel Spill Site: Reasonable Maximum Exposure Scenario

Analyte	Cancer Risk By Pathway						Hazard Index By Pathway					
	Surface Soil Pathways		Inhalation Pathways		Total Risk	% of Total Risk	Surface Soil Pathways		Inhalation Pathways		Hazard Index	% of Total Index
	Dermal Absorption	Ingestion	Vapors	Dust			Dermal Absorption	Ingestion	Vapors	Dust		
PNAs	0	0	0	0	0	*0.0*	0	0	0	0	0	*#DIV/0!*
2-Methylnaphthalene	0	0	0	0	0	*0.0*	0	0	0	0	0	*#DIV/0!*
Benzo(a)anthracene	0	4.8E-09	0	0	4.8E-09	*4.6*	0	0	0	0	0	*#DIV/0!*
Benzo(a)pyrene	0	7.6E-08	0	0	7.6E-08	*72.4*	0	0	0	0	0	*#DIV/0!*
Benzo(b)fluoranthene	0	6.2E-09	0	0	6.2E-09	*5.9*	0	0	0	0	0	*#DIV/0!*
Benzo(g,h,i)perylene	0	0	0	0	0	*0.0*	0	0	0	0	0	*#DIV/0!*
Dibenz(a,h)anthracene	0	1.4E-08	0	0	1.4E-08	*13.6*	0	0	0	0	0	*#DIV/0!*
Indeno(1,2,3-cd)pyrene	0	3.7E-09	0	0	3.7E-09	*3.5*	0	0	0	0	0	*#DIV/0!*
Phenanthrene	0	0	0	0	0	*0.0*	0	0	0	0	0	*#DIV/0!*
TOTALS	0.0E+00	1.0E-07	0.0E+00	0.0E+00	**1.0E-07**	*100*	0.0E+00	0.0E+00	0.0E+00	0.0E+00	**0.0E+00**	*#DIV/0!*
% of Total Risk or HI	0.0	100.0	0.0	0.0		100.0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		#DIV/0!

Table 4J-17
Carcinogenic and Noncarcinogenic Risk Estimates for Current Long-Term On-Base Worker (chronic) Attributable to Southeast Runway Fuel Spill Site: Average Exposure Scenario

Analyte	Cancer Risk By Pathway						Hazard Index By Pathway					
	Surface Soil Pathways		Inhalation Pathways		Total Risk	% of Total Risk	Surface Soil Pathways		Inhalation Pathways		Hazard Index	% of Total Index
	Dermal Contact	Ingestion	Vapors	Dust			Dermal Contact	Ingestion	Vapors	Dust		
PNAs	0	0	0	0	0	*0.0*	0	0	0	0	0	*#DIV/0!*
2-Methylnaphthalene	0	0	0	0	0	*0.0*	0	0	0	0	0	*#DIV/0!*
Benzo(a)anthracene	0	2.4E-08	0	0	2.4E-08	*4.6*	0	0	0	0	0	*#DIV/0!*
Benzo(a)pyrene	0	3.8E-07	0	0	3.8E-07	*72.4*	0	0	0	0	0	*#DIV/0!*
Benzo(b)fluoranthene	0	3.1E-08	0	0	3.1E-08	*5.9*	0	0	0	0	0	*#DIV/0!*
Benzo(g,h,i)perylene	0	0	0	0	0	*0.0*	0	0	0	0	0	*#DIV/0!*
Dibenz(a,h)anthracene	0	7.1E-08	0	0	7.1E-08	*13.6*	0	0	0	0	0	*#DIV/0!*
Indeno(1,2,3-cd)pyrene	0	1.8E-08	0	0	1.8E-08	*3.5*	0	0	0	0	0	*#DIV/0!*
Phenanthrene	0	0	0	0	0	*0.0*	0	0	0	0	0	*#DIV/0!*
TOTALS	0.0E+00	5.2E-07	0.0E+00	0.0E+00	**5.2E-07**	*100*	0.0E+00	0.0E+00	0.0E+00	0.0E+00	**0.0E+00**	*#DIV/0!*
% of Total Risk or HI	0.0	100.0	0.0	0.0		100.0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		#DIV/0!

Table 4J-18
Carcinogenic and Noncarcinogenic Risk Estimates for Current Long-Term On-Base Worker (chronic) Attributable to Southeast Runway Fuel Spill Site: Reasonable Maximum Exposure Scenario

Analyte	Cancer Risk By Pathway						Hazard Index By Pathway					
	Surface Soil Pathways		Inhalation Pathways		Total Risk	% of Total Risk	Surface Soil Pathways		Inhalation Pathways		Hazard Index	% of Total Index
	Dermal Contact	Ingestion	Vapors	Dust			Dermal Contact	Ingestion	Vapors	Dust		
PNAs	0	0	0	0	0	*0.0*	0	0	0	0	0	*#DIV/0!*
2-Methylnaphthalene	0	0	0	0	0	*0.0*	0	0	0	0	0	*#DIV/0!*
Benzo(a)anthracene	0	2.4E-08	0	0	2.4E-08	*4.6*	0	0	0	0	0	*#DIV/0!*
Benzo(a)pyrene	0	3.8E-07	0	0	3.8E-07	*72.4*	0	0	0	0	0	*#DIV/0!*
Benzo(b)fluoranthene	0	3.1E-08	0	0	3.1E-08	*5.9*	0	0	0	0	0	*#DIV/0!*
Benzo(g,h,i)perylene	0	0	0	0	0	*0.0*	0	0	0	0	0	*#DIV/0!*
Dibenz(a,h)anthracene	0	7.1E-08	0	0	7.1E-08	*13.6*	0	0	0	0	0	*#DIV/0!*
Indeno(1,2,3-cd)pyrene	0	1.8E-08	0	0	1.8E-08	*3.5*	0	0	0	0	0	*#DIV/0!*
Phenanthrene	0	0	0	0	0	*0.0*	0	0	0	0	0	*#DIV/0!*
TOTALS	0.0E+00	5.2E-07	0.0E+00	0.0E+00	**5.2E-07**	*100*	0.0E+00	0.0E+00	0.0E+00	0.0E+00	**0.0E+00**	*#DIV/0!*
% of Total Risk or HI	0.0	100.0	0.0	0.0		100.0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		#DIV/0!

Table 4J-19
Carcinogenic and Noncarcinogenic Risk Estimates for Current On-Base Construction Worker (subchronic) Attributable to Southeast Runway Fuel Spill Site: Average Exposure Scenario

Analyte	Cancer Risk By Pathway						Hazard Index By Pathway					
	Mixed Soil Pathways		Inhalation Pathways				Mixed Soil Pathways		Inhalation Pathways			
	Dermal Absorption	Ingestion	Vapors	Dust	Total Risk	% of Total Risk	Dermal Absorption	Ingestion	Vapors	Dust	Hazard Index	% of Total Index
PNAs	0	0	0	0	0	*0.0*	0	0	0	0	0	*#DIV/0!*
2-Methylnaphthalene	0	0	0	0	0	*0.0*	0	0	0	0	0	*#DIV/0!*
Benzo(a)anthracene	0	4.2E-10	0	0	4.2E-10	*4.6*	0	0	0	0	0	*#DIV/0!*
Benzo(a)pyrene	0	6.6E-09	0	0	6.6E-09	*72.4*	0	0	0	0	0	*#DIV/0!*
Benzo(b)fluoranthene	0	5.4E-10	0	0	5.4E-10	*5.9*	0	0	0	0	0	*#DIV/0!*
Benzo(g,h,i)perylene	0	0	0	0	0	*0.0*	0	0	0	0	0	*#DIV/0!*
Dibenz(a,h)anthracene	0	1.2E-09	0	0	1.2E-09	*13.6*	0	0	0	0	0	*#DIV/0!*
Indeno(1,2,3-cd)pyrene	0	3.2E-10	0	0	3.2E-10	*3.5*	0	0	0	0	0	*#DIV/0!*
Phenanthrene	0	0	0	0	0	*0.0*	0	0	0	0	0	*#DIV/0!*
TOTALS	0.0E+00	9.1E-09	0.0E+00	0.0E+00	**9.1E-09**	*100*	0.0E+00	0.0E+00	0.0E+00	0.0E+00	**0.0E+00**	*#DIV/0!*
% of Total Risk or HI	0.0	100.0	0.0	0.0		100.0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		#DIV/0!

Table 4J-20
Carcinogenic and Noncarcinogenic Risk Estimates for Current On-Base Construction Worker (subchronic) Attributable to Southeast Runway Fuel Spill Site: Reasonable Maximum Exposure Scenario

Analyte	Cancer Risk By Pathway						Hazard Index By Pathway					
	Mixed Soil Pathways		Inhalation Pathways				Mixed Soil Pathways		Inhalation Pathways			
	Dermal Absorption	Ingestion	Vapors	Dust	Total Risk	% of Total Risk	Dermal Absorption	Ingestion	Vapors	Dust	Hazard Index	% of Total Index
PNAs	0	0	0	0	0	*0.0*	0	0	0	0	0	*#DIV/0!*
2-Methylnaphthalene	0	0	0	0	0	*0.0*	0	0	0	0	0	*#DIV/0!*
Benzo(a)anthracene	0	8.0E-09	0	0	8.0E-09	*4.6*	0	0	0	0	0	*#DIV/0!*
Benzo(a)pyrene	0	1.3E-07	0	0	1.3E-07	*72.4*	0	0	0	0	0	*#DIV/0!*
Benzo(b)fluoranthene	0	1.0E-08	0	0	1.0E-08	*5.9*	0	0	0	0	0	*#DIV/0!*
Benzo(g,h,i)perylene	0	0	0	0	0	*0.0*	0	0	0	0	0	*#DIV/0!*
Dibenz(a,h)anthracene	0	2.4E-08	0	0	2.4E-08	*13.6*	0	0	0	0	0	*#DIV/0!*
Indeno(1,2,3-cd)pyrene	0	6.1E-09	0	0	6.1E-09	*3.5*	0	0	0	0	0	*#DIV/0!*
Phenanthrene	0	0	0	0	0	*0.0*	0	0	0	0	0	*#DIV/0!*
TOTALS	0.0E+00	1.7E-07	0.0E+00	0.0E+00	**1.7E-07**	*100*	0.0E+00	0.0E+00	0.0E+00	0.0E+00	**0.0E+00**	*#DIV/0!*
% of Total Risk or HI	0.0	100.0	0.0	0.0		100.0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		#DIV/0!

Table 4J-21
Carcinogenic and Noncarcinogenic Risk Estimates for Future Boarding School Student (subchronic) Attributable to Southeast Runway Fuel Spill Site: Average Exposure Scenario

Analyte	Cancer Risk By Pathway						Hazard Index By Pathway					
	Surface Soil Pathways		Inhalation Pathways		Total Risk	% of Total Risk	Surface Soil Pathways		Inhalation Pathways		Hazard Index	% of Total Index
	Dermal Contact	Ingestion	Vapors	Dust			Dermal Contact	Ingestion	Vapors	Dust		
PNAs	0	0	0	0	0	*#DIV/0!*	0	0	0	0	0	*#DIV/0!*
2-Methylnaphthalene	0	0	0	0	0	*#DIV/0!*	0	0	0	0	0	*#DIV/0!*
Benz(a)anthracene	0	0	0	0	0	*#DIV/0!*	0	0	0	0	0	*#DIV/0!*
Benzo(a)pyrene	0	0	0	0	0	*#DIV/0!*	0	0	0	0	0	*#DIV/0!*
Benzo(b)fluoranthene	0	0	0	0	0	*#DIV/0!*	0	0	0	0	0	*#DIV/0!*
Benzo(g,h,i)perylene	0	0	0	0	0	*#DIV/0!*	0	0	0	0	0	*#DIV/0!*
Dibenz(a,h)anthracene	0	0	0	0	0	*#DIV/0!*	0	0	0	0	0	*#DIV/0!*
Indeno(1,2,3-cd)pyrene	0	0	0	0	0	*#DIV/0!*	0	0	0	0	0	*#DIV/0!*
Phenanthrene	0	0	0	0	0	*#DIV/0!*	0	0	0	0	0	*#DIV/0!*
TOTALS	0.0E+00	0.0E+00	0.0E+00	0.0E+00	**0.0E+00**	*#DIV/0!*	0.0E+00	0.0E+00	0.0E+00	0.0E+00	**0.0E+00**	*#DIV/0!*
% of Total Risk or HI	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		#DIV/0!

Table 4J-22
Carcinogenic and Noncarcinogenic Risk Estimates for Future Boarding School Student (chronic) Attributable to Southeast Runway Fuel Spill Site: Reasonable Maximum Exposure Scenario

Analyte	Cancer Risk By Pathway						Hazard Index By Pathway					
	Surface Soil Pathways		Inhalation Pathways		Total Risk	% of Total Risk	Surface Soil Pathways		Inhalation Pathways		Hazard Index	% of Total Index
	Dermal Contact	Ingestion	Vapors	Dust			Dermal Contact	Ingestion	Vapors	Dust		
PNAs	0	0	0	0	0	*#DIV/0!*	0	0	0	0	0	*#DIV/0!*
2-Methylnaphthalene	0	0	0	0	0	*#DIV/0!*	0	0	0	0	0	*#DIV/0!*
Benz(a)anthracene	0	0	0	0	0	*#DIV/0!*	0	0	0	0	0	*#DIV/0!*
Benzo(a)pyrene	0	0	0	0	0	*#DIV/0!*	0	0	0	0	0	*#DIV/0!*
Benzo(b)fluoranthene	0	0	0	0	0	*#DIV/0!*	0	0	0	0	0	*#DIV/0!*
Benzo(g,h,i)perylene	0	0	0	0	0	*#DIV/0!*	0	0	0	0	0	*#DIV/0!*
Dibenz(a,h)anthracene	0	0	0	0	0	*#DIV/0!*	0	0	0	0	0	*#DIV/0!*
Indeno(1,2,3-cd)pyrene	0	0	0	0	0	*#DIV/0!*	0	0	0	0	0	*#DIV/0!*
Phenanthrene	0	0	0	0	0	*#DIV/0!*	0	0	0	0	0	*#DIV/0!*
TOTALS	0.0E+00	0.0E+00	0.0E+00	0.0E+00	**0.0E+00**	*#DIV/0!*	0.0E+00	0.0E+00	0.0E+00	0.0E+00	**0.0E+00**	*#DIV/0!*
% of Total Risk or HI	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		#DIV/0!

Table 4J-23
Carcinogenic and Noncarcinogenic Risk Estimates for Child Future Old Town Galena Resident (chronic) Attributable to Southeast Runway Fuel Spill Site: Average Exposure Scenario

Analyte	Carcinogenic Risk Summary								
	Groundwater Pathways		Air Pathways			Food Pathways		Total Risk	% of Total Risk
			Vapors						
	Ingestion	Dermal Contact	Outdoor VOCs	Shower VOCs	Dust	Fruit	Vegetables		
Metals									
Beryllium	2.1E-05	0	0	0	0	6.3E-07	1.1E-06	2.3E-05	99.1
PNAs	0	0	0	0	0	0	0	0	0.0
2-Methylnaphthalene	0	0	0	0	0	0	0	0	0.0
Benz(a)anthracene	0	0	0	0	0	0	0	0	0.0
Benzo(a)pyrene	0	0	0	0	0	0	0	0	0.0
Benzo(b)fluoranthene	0	0	0	0	0	0	0	0	0.0
Benzo(g,h,i)perylene	0	0	0	0	0	0	0	0	0.0
Dibenz(a,h)anthracene	0	0	0	0	0	0	0	0	0.0
Indeno(1,2,3-cd)pyrene	0	0	0	0	0	0	0	0	0.0
Phenanthrene	0	0	0	0	0	0	0	0	0.0
Volatiles	0	0	0	0	0	0	0	0	0.0
1,2-Dichloroethane	1.8E-07	8.3E-10	0	1.9E-09	0	3.9E-09	6.8E-09	1.9E-07	0.8
Benzene	9.0E-09	7.8E-10	0	1.1E-10	0	2.0E-10	3.4E-10	1.0E-08	0.0
TOTALS	2.1E-05	1.6E-09	0.0E+00	2.0E-09	0.0E+00	6.3E-07	1.1E-06	**2.3E-05**	**100**
% of Total Risk or HI	92.4	0.0	0.0	0.0	0.0	2.8	4.8		100.0

Table 4J-23
(Continued)

Analyte	Non-Carcinogenic Risk Summary								
	Groundwater Pathways		Air Pathways			Food Pathways		Hazard Index	% of Total Index
			Vapors						
	Ingestion	Dermal Contact	Outdoor VOCs	Shower VOCs	Dust	Fruit	Vegetables		
Metals									
Beryllium	1.1E-02	0	0	0	0	3.4E-04	5.9E-04	0.0123	99.1
PNAs	0	0	0	0	0	0	0	0.0000	0.0
2-Methylnaphthalene	0	0	0	0	0	0	0	0.0000	0.0
Benz(a)anthracene	0	0	0	0	0	0	0	0.0000	0.0
Benzo(a)pyrene	0	0	0	0	0	0	0	0.0000	0.0
Benzo(b)fluoranthene	0	0	0	0	0	0	0	0.0000	0.0
Benzo(g,h,i)perylene	0	0	0	0	0	0	0	0.0000	0.0
Dibenz(a,h)anthracene	0	0	0	0	0	0	0	0.0000	0.0
Indeno(1,2,3-cd)pyrene	0	0	0	0	0	0	0	0.0000	0.0
Phenanthrene	0	0	0	0	0	0	0	0.0000	0.0
Volatiles	0	0	0	0	0	0	0	0.0000	0.0
1,2-Dichloroethane	0	0	0	8.5E-05	0	0	0	0.0001	0.7
Benzene	0	0	0	2.6E-05	0	0	0	0.0000	0.2
TOTALS	1.1E-02	0.0E+00	0.0E+00	1.1E-04	0.0E+00	3.4E-04	5.9E-04	0.0124	100.0
% of Total Risk or HI	91.6	0.0	0.0	0.9	0.0	2.7	4.8		100.0

Table 4J-24

Carcinogenic and Noncarcinogenic Risk Estimates for Child Future Old Town Galena Resident (chronic) Attributable to Southeast Runway Fuel Spill Site: Reasonable Maximum Exposure Scenario

Analyte	Carcinogenic Risk Summary								
	Groundwater Pathways		Air Pathways			Food Pathways		Total Risk	% of Total Risk
			Vapors						
	Ingestion	Dermal Contact	Outdoor VOCs	Shower VOCs	Dust	Fruit	Vegetables		
Metals									
Beryllium	2.7E-05	0	0	0	0	2.0E-06	2.6E-06	3.1E-05	99.1
PNAs	0	0	0	0	0	0	0	0	0.0
2-Methylnaphthalene	0	0	0	0	0	0	0	0	0.0
Benz(a)anthracene	0	0	0	0	0	0	0	0	0.0
Benzo(a)pyrene	0	0	0	0	0	0	0	0	0.0
Benzo(b)fluoranthene	0	0	0	0	0	0	0	0	0.0
Benzo(g,h,i)perylene	0	0	0	0	0	0	0	0	0.0
Dibenz(a,h)anthracene	0	0	0	0	0	0	0	0	0.0
Indeno(1,2,3-cd)pyrene	0	0	0	0	0	0	0	0	0.0
Phenanthrene	0	0	0	0	0	0	0	0	0.0
Volatiles	0	0	0	0	0	0	0	0	0.0
1,2-Dichloroethane	2.3E-07	1.5E-09	0	1.3E-08	0	1.2E-08	1.6E-08	2.7E-07	0.9
Benzene	1.1E-08	1.4E-09	0	7.7E-10	0	6.2E-10	8.2E-10	1.5E-08	0.0
TOTALS	2.7E-05	2.9E-09	0.0E+00	1.4E-08	0.0E+00	2.0E-06	2.6E-06	**3.1E-05**	**100**
% of Total Risk or HI	85.3	0.0	0.0	0.0	0.0	6.3	8.3		100.0

Table 4J-24
(Continued)

Analyte	Non-Carcinogenic Risk Summary								
	Groundwater Pathways		Air Pathways			Food Pathways		Hazard Index	% of Total Index
			Vapors						
	Ingestion	Dermal Contact	Outdoor VOCs	Shower VOCs	Dust	Fruit	Vegetables		
Metals									
Beryllium	1.4E-02	0	0	0	0	1.1E-03	1.4E-03	0.0169	95.7
PNAs	0	0	0	0	0	0	0	0.0000	0.0
2-Methylnaphthalene	0	0	0	0	0	0	0	0.0000	0.0
Benz(a)anthracene	0	0	0	0	0	0	0	0.0000	0.0
Benzo(a)pyrene	0	0	0	0	0	0	0	0.0000	0.0
Benzo(b)fluoranthene	0	0	0	0	0	0	0	0.0000	0.0
Benzo(g,h,i)perylene	0	0	0	0	0	0	0	0.0000	0.0
Dibenz(a,h)anthracene	0	0	0	0	0	0	0	0.0000	0.0
Indeno(1,2,3-cd)pyrene	0	0	0	0	0	0	0	0.0000	0.0
Phenanthrene	0	0	0	0	0	0	0	0.0000	0.0
Volatiles	0	0	0	0	0	0	0	0.0000	0.0
1,2-Dichloroethane	0	0	0	5.8E-04	0	0	0	0.0006	3.3
Benzene	0	0	0	1.8E-04	0	0	0	0.0002	1.0
TOTALS	1.4E-02	0.0E+00	0.0E+00	7.6E-04	0.0E+00	1.1E-03	1.4E-03	0.0177	100.0
% of Total Risk or HI	81.7	0.0	0.0	4.3	0.0	6.0	8.0		100.0

Table 4J-25
Carcinogenic and Noncarcinogenic Risk Estimates for Adult Future Old Town Galena Resident (chronic) Attributable to Southeast Runway Fuel Spill Site: Average Exposure Scenario

Analyte	Carcinogenic Risk Summary								
	Groundwater Pathways		Air Pathways			Food Pathways		Total Risk	% of Total Risk
			Vapors						
	Ingestion	Dermal Contact	Outdoor VOCs	Shower VOCs	Dust	Fruit	Vegetables		
Metals									
Beryllium	2.6E-05	0	0	0	0	7.2E-07	5.8E-07	2.7E-05	99.1
PNAs	0	0	0	0	0	0	0	0	0.0
2-Methylnaphthalene	0	0	0	0	0	0	0	0	0.0
Benz(a)anthracene	0	0	0	0	0	0	0	0	0.0
Benzo(a)pyrene	0	0	0	0	0	0	0	0	0.0
Benzo(b)fluoranthene	0	0	0	0	0	0	0	0	0.0
Benzo(g,h,i)perylene	0	0	0	0	0	0	0	0	0.0
Dibenz(a,h)anthracene	0	0	0	0	0	0	0	0	0.0
Indeno(1,2,3-cd)pyrene	0	0	0	0	0	0	0	0	0.0
Phenanthrene	0	0	0	0	0	0	0	0	0.0
Volatiles	0	0	0	0	0	0	0	0	0.0
1,2-Dichloroethane	2.2E-07	2.0E-09	0	4.6E-09	0	4.5E-09	3.6E-09	2.3E-07	0.9
Benzene	1.1E-08	1.9E-09	0	2.7E-10	0	2.3E-10	1.8E-10	1.4E-08	0.0
TOTALS	2.6E-05	3.9E-09	0.0E+00	4.9E-09	0.0E+00	7.2E-07	5.8E-07	**2.7E-05**	**100**
% of Total Risk or HI	95.2	0.0	0.0	0.0	0.0	2.7	2.1		100.0

Table 4J-25
(Continued)

Analyte	Non-Carcinogenic Risk Summary								
	Groundwater Pathways		Air Pathways			Food Pathways		Hazard Index	% of Total Index
			Vapors						
	Ingestion	Dermal Contact	Outdoor VOCs	Shower VOCs	Dust	Fruit	Vegetables		
Metals									
Beryllium	3.4E-03	0	0	0	0	9.5E-05	7.7E-05	0.0036	98.2
PNAs	0	0	0	0	0	0	0	0.0000	0.0
2-Methylnaphthalene	0	0	0	0	0	0	0	0.0000	0.0
Benz(a)anthracene	0	0	0	0	0	0	0	0.0000	0.0
Benzo(a)pyrene	0	0	0	0	0	0	0	0.0000	0.0
Benzo(b)fluoranthene	0	0	0	0	0	0	0	0.0000	0.0
Benzo(g,h,i)perylene	0	0	0	0	0	0	0	0.0000	0.0
Dibenz(a,h)anthracene	0	0	0	0	0	0	0	0.0000	0.0
Indeno(1,2,3-cd)pyrene	0	0	0	0	0	0	0	0.0000	0.0
Phenanthrene	0	0	0	0	0	0	0	0.0000	0.0
Volatiles	0	0	0	0	0	0	0	0.0000	0.0
1,2-Dichloroethane	0	0	0	5.1E-05	0	0	0	0.0001	1.4
Benzene	0	0	0	1.5E-05	0	0	0	0.0000	0.4
TOTALS	3.4E-03	0.0E+00	0.0E+00	6.6E-05	0.0E+00	9.5E-05	7.7E-05	0.0036	100.0
% of Total Risk or HI	93.5	0.0	0.0	1.8	0.0	2.6	2.1		100.0

Table 4J-26
Carcinogenic and Noncarcinogenic Risk Estimates for Adult Future Old Town Galena Resident (chronic) Attributable to Southeast Runway Fuel Spill Site: Reasonable Maximum Exposure Scenario

Analyte	Carcinogenic Risk Summary								
	Groundwater Pathways		Air Pathways			Food Pathways		Total Risk	% of Total Risk
			Vapors						
	Ingestion	Dermal Contact	Outdoor VOCs	Shower VOCs	Dust	Fruit	Vegetables		
Metals									
Beryllium	1.3E-04	0	0	0	0	6.2E-06	4.8E-06	1.4E-04	99.1
PNAs	0	0	0	0	0	0	0	0	0.0
2-Methylnaphthalene	0	0	0	0	0	0	0	0	0.0
Benz(a)anthracene	0	0	0	0	0	0	0	0	0.0
Benzo(a)pyrene	0	0	0	0	0	0	0	0	0.0
Benzo(b)fluoranthene	0	0	0	0	0	0	0	0	0.0
Benzo(g,h,i)perylene	0	0	0	0	0	0	0	0	0.0
Dibenz(a,h)anthracene	0	0	0	0	0	0	0	0	0.0
Indeno(1,2,3-cd)pyrene	0	0	0	0	0	0	0	0	0.0
Phenanthrene	0	0	0	0	0	0	0	0	0.0
Volatiles	0	0	0	0	0	0	0	0	0.0
1,2-Dichloroethane	1.1E-06	1.0E-08	0	9.0E-08	0	3.9E-08	3.0E-08	1.3E-06	0.9
Benzene	5.7E-08	9.7E-09	0	5.4E-09	0	2.0E-09	1.5E-09	7.6E-08	0.1
TOTALS	1.3E-04	2.0E-08	0.0E+00	9.5E-08	0.0E+00	6.2E-06	4.8E-06	**1.5E-04**	**100**
% of Total Risk or HI	92.3	0.0	0.0	0.1	0.0	4.3	3.3		100.0

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Table 4J-26
(Continued)

Analyte	Non-Carcinogenic Risk Summary								
	Groundwater Pathways		Air Pathways			Food Pathways		Hazard Index	% of Total Index
			Vapors						
	Ingestion	Dermal Contact	Outdoor VOCs	Shower VOCs	Dust	Fruit	Vegetables		
Metals									
Beryllium	6.2E-03	0	0	0	0	2.9E-04	2.2E-04	0.0067	93.6
PNAs	0	0	0	0	0	0	0	0.0000	0.0
2-Methylnaphthalene	0	0	0	0	0	0	0	0.0000	0.0
Benz(a)anthracene	0	0	0	0	0	0	0	0.0000	0.0
Benzo(a)pyrene	0	0	0	0	0	0	0	0.0000	0.0
Benzo(b)fluoranthene	0	0	0	0	0	0	0	0.0000	0.0
Benzo(g,h,i)perylene	0	0	0	0	0	0	0	0.0000	0.0
Dibenz(a,h)anthracene	0	0	0	0	0	0	0	0.0000	0.0
Indeno(1,2,3-cd)pyrene	0	0	0	0	0	0	0	0.0000	0.0
Phenanthrene	0	0	0	0	0	0	0	0.0000	0.0
Volatiles	0	0	0	0	0	0	0	0.0000	0.0
1,2-Dichloroethane	0	0	0	3.5E-04	0	0	0	0.0003	4.8
Benzene	0	0	0	1.1E-04	0	0	0	0.0001	1.5
TOTALS	6.2E-03	0.0E+00	0.0E+00	4.6E-04	0.0E+00	2.9E-04	2.2E-04	0.0072	100.0
% of Total Risk or HI	86.5	0.0	0.0	6.4	0.0	4.0	3.1		100.0

Table 4J-27
Carcinogenic and Noncarcinogenic Risk Estimates for Adult Current Short-Term On-Base Resident (subchronic) Attributable to Control Tower Drum Storage Area, South: Average Exposure Scenario

Analyte	Effective Air Concentrations ug/m3						Cancer Risk Summary				Non-Cancer Hazard Index Summary			
	Carcinogens				Non-Carcinogens									
	on off	Vapors	on off	Dust	Vapors	Dust	Vapor Inhalation	Dust Inhalation	Total Risk	% of Total Risk	Vapor Inhalation	Dust Inhalation	Total Hazard Index	% of Total HI
Metals														
Antimony	0	0	1	9.4E-08	0	3.3E-06	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Thallium	0	0	1	6.1E-08	0	2.1E-06	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Pesticides	0	0	0	0	0	0	0	0	0	*0.0*	0	0	0	*#DIV/0!*
4,4'-DDT	0	0	1	1.2E-09	0	4.2E-08	0	1.2E-13	1.2E-13	*42.5*	0	0	0	*#DIV/0!*
Aldrin	0	0	1	1.4E-11	0	4.9E-10	0	6.9E-14	6.9E-14	*25.4*	0	0	0	*#DIV/0!*
Dieldrin	0	0	1	1.9E-11	0	6.6E-10	0	8.7E-14	8.7E-14	*32.1*	0	0	0	*#DIV/0!*
PNAs	0	0	0	0	0	0	0	0	0	*0.0*	0	0	0	*#DIV/0!*
2-Methylnaphthalene	0	0	1	5.5E-11	0	1.9E-09	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Benzo(a)pyrene	0	0	1	2.1E-10	0	7.5E-09	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Benzo(b)fluoranthene	0	0	1	3.6E-10	0	1.3E-08	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Benzo(g,h,i)perylene	0	0	1	1.9E-10	0	6.5E-09	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Phenanthrene	0	0	1	3.0E-10	0	1.1E-08	0	0	0	*0.0*	0	0	0	*#DIV/0!*
TOTALS		0.0E+00		1.6E-07	0.0E+00	5.5E-06	0.0E+00	2.7E-13	**2.7E-13**	***100***	0.0E+00	0.0E+00	**0.00**	***#DIV/0!***
% of Total Risk or HI							0.0	100.0		100.0	#DIV/0!	#DIV/0!		#DIV/0!

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Table 4J-28
Carcinogenic and Noncarcinogenic Risk Estimates for Adult Current Short-Term On-Base Resident (subchronic) Attributable to Control Tower Drum Storage Area, South: Reasonable Maximum Exposure Scenario

Analyte	Effective Air Concentrations ug/m3						Cancer Risk Summary				Non-Cancer Hazard Index Summary			
	Carcinogens				Non-Carcinogens									
	on off	Vapors	on off	Dust	Vapors	Dust	Vapor Inhalation	Dust Inhalation	Total Risk	% of Total Risk	Vapor Inhalation	Dust Inhalation	Total Hazard Index	% of Total HI
Metals														
Antimony	0	0	1	3.0E-07	0	4.2E-06	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Thallium	0	0	1	1.9E-07	0	2.7E-06	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Pesticides	0	0	0	0	0	0	0	0	0	*0.0*	0	0	0	*#DIV/0!*
4,4'-DDT	0	0	1	3.8E-09	0	5.3E-08	0	3.7E-13	3.7E-13	*42.5*	0	0	0	*#DIV/0!*
Aldrin	0	0	1	4.5E-11	0	6.3E-10	0	2.2E-13	2.2E-13	*25.4*	0	0	0	*#DIV/0!*
Dieldrin	0	0	1	6.0E-11	0	8.4E-10	0	2.8E-13	2.8E-13	*32.1*	0	0	0	*#DIV/0!*
PNAs	0	0	0	0	0	0	0	0	0	*0.0*	0	0	0	*#DIV/0!*
2-Methylnaphthalene	0	0	1	1.8E-10	0	2.5E-09	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Benzo(a)pyrene	0	0	1	6.8E-10	0	9.6E-09	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Benzo(b)fluoranthene	0	0	1	1.1E-09	0	1.6E-08	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Benzo(g,h,i)perylene	0	0	1	5.9E-10	0	8.3E-09	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Phenanthrene	0	0	1	9.7E-10	0	1.4E-08	0	0	0	*0.0*	0	0	0	*#DIV/0!*
TOTALS		0.0E+00		5.0E-07	0.0E+00	7.0E-06	0.0E+00	8.6E-13	**8.6E-13**	***100***	0.0E+00	0.0E+00	**0.0E+00**	***#DIV/0!***
% of Total Risk or HI							0.0	100.0		100.0	#DIV/0!	#DIV/0!		#DIV/0!

Table 4J-29
Carcinogenic and Noncarcinogenic Risk Estimates for Child Current Long-Term On-Base Resident (chronic) Attributable to Control Tower Drum Storage Area, South: Average Exposure Scenario

Analyte	Cancer Risk Summary				Non-Cancer Hazard Index Summary			
	Vapor Inhalation	Dust Inhalation	Total Risk	% of Total Risk	Vapor Inhalation	Dust Inhalation	Total Hazard Index	% of Total HI
Metals								
Antimony	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Thallium	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Pesticides	0	0	0	*0.0*	0	0	0	*#DIV/0!*
4,4'-DDT	0	3.5E-13	3.5E-13	*42.5*	0	0	0	*#DIV/0!*
Aldrin	0	2.1E-13	2.1E-13	*25.4*	0	0	0	*#DIV/0!*
Dieldrin	0	2.6E-13	2.6E-13	*32.1*	0	0	0	*#DIV/0!*
PNAs	0	0	0	*0.0*	0	0	0	*#DIV/0!*
2-Methylnaphthalene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Benzo(a)pyrene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Benzo(b)fluoranthene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Benzo(g,h,i)perylene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Phenanthrene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
TOTALS	0.0E+00	8.1E-13	**8.1E-13**	***100***	0.0E+00	0.0E+00	**0.0E+00**	***#DIV/0!***
% of Total Risk or HI	0.0	100.0		100.0	#DIV/0!	#DIV/0!		#DIV/0!

Table 4J-30

Carcinogenic and Noncarcinogenic Risk Estimates for Child Current Long-Term On-Base Resident (chronic) Attributable to Control Tower Drum Storage Area, South: Reasonable Maximum Exposure Scenario

Analyte	Cancer Risk Summary				Non-Cancer Hazard Index Summary			
	Vapor Inhalation	Dust Inhalation	Total Risk	% of Total Risk	Vapor Inhalation	Dust Inhalation	Total Hazard Index	% of Total HI
Metals								
Antimony	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Thallium	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Pesticides	0	0	0	*0.0*	0	0	0	*#DIV/0!*
4,4'-DDT	0	4.4E-13	4.4E-13	*42.5*	0	0	0	*#DIV/0!*
Aldrin	0	2.6E-13	2.6E-13	*25.4*	0	0	0	*#DIV/0!*
Dieldrin	0	3.3E-13	3.3E-13	*32.1*	0	0	0	*#DIV/0!*
PNAs	0	0	0	*0.0*	0	0	0	*#DIV/0!*
2-Methylnaphthalene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Benzo(a)pyrene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Benzo(b)fluoranthene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Benzo(g,h,i)perylene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Phenanthrene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
TOTALS	0.0E+00	1.0E-12	**1.0E-12**	***100***	0.0E+00	0.0E+00	**0.0E+00**	***#DIV/0!***
% of Total Risk or HI	0.0	100.0		100.0	#DIV/0!	#DIV/0!		#DIV/0!

Table 4J-31
Carcinogenic and Noncarcinogenic Risk Estimates for Adult Current Long-Term On-Base Resident (chronic) Attributable to Control Tower Drum Storage Area, South: Average Exposure Scenario

Analyte	Cancer Risk Summary				Non-Cancer Hazard Index Summary			
	Vapor Inhalation	Dust Inhalation	Total Risk	% of Total Risk	Vapor Inhalation	Dust Inhalation	Total Hazard Index	% of Total HI
Metals								
Antimony	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Thallium	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Pesticides	0	0	0	*0.0*	0	0	0	*#DIV/0!*
4,4'-DDT	0	5.2E-13	5.2E-13	*42.5*	0	0	0	*#DIV/0!*
Aldrin	0	3.1E-13	3.1E-13	*25.4*	0	0	0	*#DIV/0!*
Dieldrin	0	3.9E-13	3.9E-13	*32.1*	0	0	0	*#DIV/0!*
PNAs	0	0	0	*0.0*	0	0	0	*#DIV/0!*
2-Methylnaphthalene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Benzo(a)pyrene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Benzo(b)fluoranthene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Benzo(g,h,i)perylene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Phenanthrene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
TOTALS	0.0E+00	1.2E-12	**1.2E-12**	***100***	0.0E+00	0.0E+00	**0.0E+00**	***#DIV/0!***
% of Total Risk or HI	0.0	100.0		100.0	#DIV/0!	#DIV/0!		#DIV/0!

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Table 4J-32

Carcinogenic and Noncarcinogenic Risk Estimates for Adult Current Long-Term On-Base Resident (chronic) Attributable to Control Tower Drum Storage Area, South: Reasonable Maximum Exposure Scenario

Analyte	Cancer Risk Summary				Non-Cancer Hazard Index Summary			
	Vapor Inhalation	Dust Inhalation	Total Risk	% of Total Risk	Vapor Inhalation	Dust Inhalation	Total Hazard Index	% of Total HI
Metals								
Antimony	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Thallium	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Pesticides	0	0	0	*0.0*	0	0	0	*#DIV/0!*
4,4'-DDT	0	1.8E-12	1.8E-12	*42.5*	0	0	0	*#DIV/0!*
Aldrin	0	1.1E-12	1.1E-12	*25.4*	0	0	0	*#DIV/0!*
Dieldrin	0	1.4E-12	1.4E-12	*32.1*	0	0	0	*#DIV/0!*
PNAs	0	0	0	*0.0*	0	0	0	*#DIV/0!*
2-Methylnaphthalene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Benzo(a)pyrene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Benzo(b)fluoranthene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Benzo(g,h,i)perylene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Phenanthrene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
TOTALS	0.0E+00	4.3E-12	**4.3E-12**	***100***	0.0E+00	0.0E+00	**0.0E+00**	***#DIV/0!***
% of Total Risk or HI	0.0	100.0		100.0	#DIV/0!	#DIV/0!		#DIV/0!

Table 4J-33

Carcinogenic and Noncarcinogenic Risk Estimates for Child Current Old Town Galena Resident (chronic) Attributable to Control Tower Drum Storage Area, South: Average Exposure Scenario

Analyte	Cancer Risk Summary				Non-Cancer Hazard Index Summary			
	Vapor Inhalation	Dust Inhalation	Total Risk	% of Total Risk	Vapor Inhalation	Dust Inhalation	Total Hazard Index	% of Total HI
Metals								
Antimony	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Thallium	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Pesticides	0	0	0	*0.0*	0	0	0	*#DIV/0!*
4,4'-DDT	0	5.5E-13	5.5E-13	*42.5*	0	0	0	*#DIV/0!*
Aldrin	0	3.3E-13	3.3E-13	*25.4*	0	0	0	*#DIV/0!*
Dieldrin	0	4.2E-13	4.2E-13	*32.1*	0	0	0	*#DIV/0!*
PNAs	0	0	0	*0.0*	0	0	0	*#DIV/0!*
2-Methylnaphthalene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Benzo(a)pyrene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Benzo(b)fluoranthene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Benzo(g,h,i)perylene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Phenanthrene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
TOTALS	0.0E+00	1.3E-12	**1.3E-12**	***100***	0.0E+00	0.0E+00	**0.0E+00**	***#DIV/0!***
% of Total Risk or HI	0.0	100.0		100.0	#DIV/0!	#DIV/0!		#DIV/0!

Table 4J-34
Carcinogenic and Noncarcinogenic Risk Estimates for Child Current Old Town Galena Resident (chronic) Attributable to Control Tower Drum Storage Area, South: Reasonable Maximum Exposure Scenario

Analyte	Cancer Risk Summary				Non-Cancer Hazard Index Summary			
	Vapor Inhalation	Dust Inhalation	Total Risk	% of Total Risk	Vapor Inhalation	Dust Inhalation	Total Hazard Index	% of Total HI
Metals								
Antimony	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Thallium	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Pesticides	0	0	0	*0.0*	0	0	0	*#DIV/0!*
4,4'-DDT	0	7.0E-13	7.0E-13	*42.5*	0	0	0	*#DIV/0!*
Aldrin	0	4.2E-13	4.2E-13	*25.4*	0	0	0	*#DIV/0!*
Dieldrin	0	5.3E-13	5.3E-13	*32.1*	0	0	0	*#DIV/0!*
PNAs	0	0	0	*0.0*	0	0	0	*#DIV/0!*
2-Methylnaphthalene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Benzo(a)pyrene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Benzo(b)fluoranthene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Benzo(g,h,i)perylene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Phenanthrene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
TOTALS	0.0E+00	1.7E-12	**1.7E-12**	***100***	0.0E+00	0.0E+00	**0.0E+00**	***#DIV/0!***
% of Total Risk or HI	0.0	100.0		100.0	#DIV/0!	#DIV/0!		#DIV/0!

Table 4J-35

Carcinogenic and Noncarcinogenic Risk Estimates for Adult Current Old Town Galena Resident (chronic) Attributable to Control Tower Drum Storage Area, South: Average Exposure Scenario

Analyte	Cancer Risk Summary				Non-Cancer Hazard Index Summary			
	Vapor Inhalation	Dust Inhalation	Total Risk	% of Total Risk	Vapor Inhalation	Dust Inhalation	Total Hazard Index	% of Total HI
Metals								
Antimony	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Thallium	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Pesticides	0	0	0	*0.0*	0	0	0	*#DIV/0!*
4,4'-DDT	0	2.3E-12	2.3E-12	*42.5*	0	0	0	*#DIV/0!*
Aldrin	0	1.3E-12	1.3E-12	*25.4*	0	0	0	*#DIV/0!*
Dieldrin	0	1.7E-12	1.7E-12	*32.1*	0	0	0	*#DIV/0!*
PNAs	0	0	0	*0.0*	0	0	0	*#DIV/0!*
2-Methylnaphthalene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Benzo(a)pyrene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Benzo(b)fluoranthene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Benzo(g,h,i)perylene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Phenanthrene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
TOTALS	0.0E+00	5.3E-12	**5.3E-12**	***100***	0.0E+00	0.0E+00	**0.0E+00**	***#DIV/0!***
% of Total Risk or HI	0.0	100.0		100.0	#DIV/0!	#DIV/0!		#DIV/0!

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Table 4J-36
Carcinogenic and Noncarcinogenic Risk Estimates for Adult Current Old Town Galena Resident (chronic) Attributable to Control Tower Drum Storage Area, South: Reasonable Maximum Exposure Scenario

Analyte	Cancer Risk Summary				Non-Cancer Hazard Index Summary			
	Vapor Inhalation	Dust Inhalation	Total Risk	% of Total Risk	Vapor Inhalation	Dust Inhalation	Total Hazard Index	% of Total HI
Metals								
Antimony	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Thallium	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Pesticides	0	0	0	*0.0*	0	0	0	*#DIV/0!*
4,4'-DDT	0	8.2E-12	8.2E-12	*42.5*	0	0	0	*#DIV/0!*
Aldrin	0	4.9E-12	4.9E-12	*25.4*	0	0	0	*#DIV/0!*
Dieldrin	0	6.2E-12	6.2E-12	*32.1*	0	0	0	*#DIV/0!*
PNAs	0	0	0	*0.0*	0	0	0	*#DIV/0!*
2-Methylnaphthalene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Benzo(a)pyrene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Benzo(b)fluoranthene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Benzo(g,h,i)perylene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Phenanthrene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
TOTALS	0.0E+00	1.9E-11	**1.9E-11**	***100***	0.0E+00	0.0E+00	**0.0E+00**	***#DIV/0!***
% of Total Risk or HI	0.0	100.0		100.0	#DIV/0!	#DIV/0!		#DIV/0!

Table 4J-37

Carcinogenic and Noncarcinogenic Risk Estimates for Child Current New Town Galena Resident (chronic) Attributable to Control Tower Drum Storage Area, South: Average Exposure Scenario

Analyte	Cancer Risk Summary				Non-Cancer Hazard Index Summary			
	Vapor Inhalation	Dust Inhalation	Total Risk	% of Total Risk	Vapor Inhalation	Dust Inhalation	Total Hazard Index	% of Total HI
Metals								
Antimony	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Thallium	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Pesticides	0	0	0	*0.0*	0	0	0	*#DIV/0!*
4,4'-DDT	0	2.1E-14	2.1E-14	*42.5*	0	0	0	*#DIV/0!*
Aldrin	0	1.3E-14	1.3E-14	*25.4*	0	0	0	*#DIV/0!*
Dieldrin	0	1.6E-14	1.6E-14	*32.1*	0	0	0	*#DIV/0!*
PNAs	0	0	0	*0.0*	0	0	0	*#DIV/0!*
2-Methylnaphthalene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Benzo(a)pyrene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Benzo(b)fluoranthene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Benzo(g,h,i)perylene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Phenanthrene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
TOTALS	0.0E+00	5.0E-14	**5.0E-14**	***100***	0.0E+00	0.0E+00	**0.0E+00**	***#DIV/0!***
% of Total Risk or HI	0.0	100.0		100.0	#DIV/0!	#DIV/0!		#DIV/0!

Table 4J-38

Carcinogenic and Noncarcinogenic Risk Estimates for Child Current New Town Galena Resident (chronic) Attributable to Control Tower Drum Storage Area, South: Reasonable Maximum Exposure Scenario

Analyte	Cancer Risk Summary				Non-Cancer Hazard Index Summary			
	Vapor Inhalation	Dust Inhalation	Total Risk	% of Total Risk	Vapor Inhalation	Dust Inhalation	Total Hazard Index	% of Total HI
Metals								
Antimony	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Thallium	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Pesticides	0	0	0	*0.0*	0	0	0	*#DIV/0!*
4,4'-DDT	0	2.7E-14	2.7E-14	*42.5*	0	0	0	*#DIV/0!*
Aldrin	0	1.6E-14	1.6E-14	*25.4*	0	0	0	*#DIV/0!*
Dieldrin	0	2.1E-14	2.1E-14	*32.1*	0	0	0	*#DIV/0!*
PNAs	0	0	0	*0.0*	0	0	0	*#DIV/0!*
2-Methylnaphthalene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Benzo(a)pyrene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Benzo(b)fluoranthene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Benzo(g,h,i)perylene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Phenanthrene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
TOTALS	0.0E+00	6.4E-14	**6.4E-14**	***100***	0.0E+00	0.0E+00	**0.0E+00**	***#DIV/0!***
% of Total Risk or HI	0.0	100.0		100.0	#DIV/0!	#DIV/0!		#DIV/0!

Table 4J-39

Carcinogenic and Noncarcinogenic Risk Estimates for Adult Current New Town Galena Resident (chronic) Attributable to Control Tower Drum Storage Area, South: Average Exposure Scenario

Analyte	Cancer Risk Summary				Non-Cancer Hazard Index Summary			
	Vapor Inhalation	Dust Inhalation	Total Risk	% of Total Risk	Vapor Inhalation	Dust Inhalation	Total Hazard Index	% of Total HI
Metals								
Antimony	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Thallium	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Pesticides	0	0	0	*0.0*	0	0	0	*#DIV/0!*
4,4'-DDT	0	8.7E-14	8.7E-14	*42.5*	0	0	0	*#DIV/0!*
Aldrin	0	5.2E-14	5.2E-14	*25.4*	0	0	0	*#DIV/0!*
Dieldrin	0	6.6E-14	6.6E-14	*32.1*	0	0	0	*#DIV/0!*
PNAs	0	0	0	*0.0*	0	0	0	*#DIV/0!*
2-Methylnaphthalene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Benzo(a)pyrene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Benzo(b)fluoranthene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Benzo(g,h,i)perylene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Phenanthrene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
TOTALS	0.0E+00	2.0E-13	**2.0E-13**	***100***	0.0E+00	0.0E+00	**0.0E+00**	***#DIV/0!***
% of Total Risk or HI	0.0	100.0		100.0	#DIV/0!	#DIV/0!		#DIV/0!

Table 4J-40

Carcinogenic and Noncarcinogenic Risk Estimates for Adult Current New Town Galena Resident (chronic) Attributable to Control Tower Drum Storage Area, South: Reasonable Maximum Exposure Scenario

Analyte	Cancer Risk Summary				Non-Cancer Hazard Index Summary			
	Vapor Inhalation	Dust Inhalation	Total Risk	% of Total Risk	Vapor Inhalation	Dust Inhalation	Total Hazard Index	% of Total HI
Metals								
Antimony	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Thallium	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Pesticides	0	0	0	*0.0*	0	0	0	*#DIV/0!*
4,4'-DDT	0	3.2E-13	3.2E-13	*42.5*	0	0	0	*#DIV/0!*
Aldrin	0	1.9E-13	1.9E-13	*25.4*	0	0	0	*#DIV/0!*
Dieldrin	0	2.4E-13	2.4E-13	*32.1*	0	0	0	*#DIV/0!*
PNAs	0	0	0	*0.0*	0	0	0	*#DIV/0!*
2-Methylnaphthalene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Benzo(a)pyrene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Benzo(b)fluoranthene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Benzo(g,h,i)perylene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
Phenanthrene	0	0	0	*0.0*	0	0	0	*#DIV/0!*
TOTALS	0.0E+00	7.5E-13	**7.5E-13**	***100***	0.0E+00	0.0E+00	**0.0E+00**	***#DIV/0!***
% of Total Risk or HI	0.0	100.0		100.0	#DIV/0!	#DIV/0!		#DIV/0!

Table 4J-41

Carcinogenic and Noncarcinogenic Risk Estimates for Current Short-Term On-Base Worker (subchronic) Attributable to Control Tower Drum Storage Area, South: Average Exposure Scenario

Analyte	Cancer Risk By Pathway						Hazard Index By Pathway					
	Surface Soil Pathways		Inhalation Pathways				Surface Soil Pathways		Inhalation Pathways			
	Dermal Contact	Ingestion	Vapors	Dust	Total Risk	% of Total Risk	Dermal Contact	Ingestion	Vapors	Dust	Hazard Index	% of Total Index
Metals												
Antimony	0	0	0	0	0	*0.0*	1.7E-02	2.9E-02	0	0	4.6E-02	*99.1*
Thallium	0	0	0	0	0	*0.0*	0	0	0	0	0	*0.0*
PNAs	0	0	0	0	0	*0.0*	0	0	0	0	0	*0.0*
2-Methylnaphthalene	0	0	0	0	0	*0.0*	0	0	0	0	0	*0.0*
Benzo(a)pyrene	0	5.5E-09	0	0	5.5E-09	*18.5*	0	0	0	0	0	*0.0*
Benzo(b)fluoranthene	0	9.2E-10	0	0	9.2E-10	*3.1*	0	0	0	0	0	*0.0*
Benzo(g,h,i)perylene	0	0	0	0	0	*0.0*	0	0	0	0	0	*0.0*
Phenanthrene	0	0	0	0	0	*0.0*	0	0	0	0	0	*0.0*
Pesticides	0	0	0	0	0	*0.0*	0	0	0	0	0	*0.0*
4,4'-DDT	8.5E-09	1.4E-09	0	7.7E-12	9.9E-09	*33.5*	0	2.9E-04	0	0	2.9E-04	*0.6*
Aldrin	5.0E-09	8.4E-10	0	4.6E-12	5.9E-09	*19.8*	0	5.7E-05	0	0	5.7E-05	*0.1*
Dieldrin	6.4E-09	1.1E-09	0	5.8E-12	7.4E-09	*25.1*	0	4.6E-05	0	0	4.6E-05	*0.1*
TOTALS	2.0E-08	9.7E-09	0.0E+00	1.8E-11	**3.0E-08**	*100*	1.7E-02	2.9E-02	0.0E+00	0.0E+00	**4.6E-02**	*100*
% of Total Risk or HI	67.1	32.8	0.0	0.1		100.0	37.2	62.8	0.0	0.0		100.0

Table 4J-42
Carcinogenic and Noncarcinogenic Risk Estimates for Current Short-Term On-Base Worker (subchronic) Attributable to Control Tower Drum Storage Area, South: Reasonable Maximum Exposure Scenario

Analyte	Cancer Risk By Pathway						Hazard Index By Pathway					
	Surface Soil Pathways		Inhalation Pathways		Total Risk	% of Total Risk	Surface Soil Pathways		Inhalation Pathways		Hazard Index	% of Total Index
	Dermal Absorption	Ingestion	Vapors	Dust			Dermal Absorption	Ingestion	Vapors	Dust		
Metals												
Antimony	0	0	0	0	0	*0.0*	2.9E-02	2.9E-02	0	0	5.7E-02	*99.3*
Thallium	0	0	0	0	0	*0.0*	0	0	0	0	0	*0.0*
PNAs	0	0	0	0	0	*0.0*	0	0	0	0	0	*0.0*
2-Methylnaphthalene	0	0	0	0	0	*0.0*	0	0	0	0	0	*0.0*
Benzo(a)pyrene	0	1.4E-08	0	0	1.4E-08	*12.8*	0	0	0	0	0	*0.0*
Benzo(b)fluoranthene	0	2.3E-09	0	0	2.3E-09	*2.1*	0	0	0	0	0	*0.0*
Benzo(g,h,i)perylene	0	0	0	0	0	*0.0*	0	0	0	0	0	*0.0*
Phenanthrene	0	0	0	0	0	*0.0*	0	0	0	0	0	*0.0*
Pesticides	0	0	0	0	0	*0.0*	0	0	0	0	0	*0.0*
4,4'-DDT	3.5E-08	3.5E-09	0	5.8E-11	3.9E-08	*36.3*	0	2.9E-04	0	0	2.9E-04	*0.5*
Aldrin	2.1E-08	2.1E-09	0	3.5E-11	2.3E-08	*21.5*	0	5.7E-05	0	0	5.7E-05	*0.1*
Dieldrin	2.7E-08	2.7E-09	0	4.4E-11	2.9E-08	*27.2*	0	4.6E-05	0	0	4.6E-05	*0.1*
TOTALS	8.3E-08	2.4E-08	0.0E+00	1.4E-10	**1.1E-07**	*100*	2.9E-02	2.9E-02	0.0E+00	0.0E+00	**5.8E-02**	*100*
% of Total Risk or HI	77.2	22.7	0.0	0.1		100.0	49.7	50.3	0.0	0.0		100.0

Table 4J-43

Carcinogenic and Noncarcinogenic Risk Estimates for Current Long-Term On-Base Worker (chronic) Attributable to Control Tower Drum Storage Area, South: Average Exposure Scenario

Analyte	Cancer Risk By Pathway						Hazard Index By Pathway					
	Surface Soil Pathways		Inhalation Pathways		Total Risk	% of Total Risk	Surface Soil Pathways		Inhalation Pathways		Hazard Index	% of Total Index
	Dermal Contact	Ingestion	Vapors	Dust			Dermal Contact	Ingestion	Vapors	Dust		
Metals												
Antimony	0	0	0	0	0	*0.0*	0	0	0	0	0	*0.0*
Thallium	0	0	0	0	0	*0.0*	5.6E-02	9.4E-02	0	0	1.5E-01	*98.2*
PNAs	0	0	0	0	0	*0.0*	0	0	0	0	0	*0.0*
2-Methylnaphthalene	0	0	0	0	0	*0.0*	0	0	0	0	0	*0.0*
Benzo(a)pyrene	0	6.9E-08	0	0	6.9E-08	*18.5*	0	0	0	0	0	*0.0*
Benzo(b)fluoranthene	0	1.1E-08	0	0	1.1E-08	*3.1*	0	0	0	0	0	*0.0*
Benzo(g,h,i)perylene	0	0	0	0	0	*0.0*	0	0	0	0	0	*0.0*
Phenanthrene	0	0	0	0	0	*0.0*	0	0	0	0	0	*0.0*
Pesticides	0	0	0	0	0	*0.0*	0	0	0	0	0	*0.0*
4,4'-DDT	1.1E-07	1.8E-08	0	9.6E-11	1.2E-07	*33.5*	1.7E-03	2.9E-04	0	0	2.0E-03	*1.3*
Aldrin	6.3E-08	1.0E-08	0	5.7E-11	7.3E-08	*19.8*	3.4E-04	5.7E-05	0	0	4.0E-04	*0.3*
Dieldrin	8.0E-08	1.3E-08	0	7.3E-11	9.3E-08	*25.1*	2.8E-04	4.6E-05	0	0	3.2E-04	*0.2*
TOTALS	2.5E-07	1.2E-07	0.0E+00	2.3E-10	**3.7E-07**	*100*	5.9E-02	9.4E-02	0.0E+00	0.0E+00	**1.5E-01**	*100*
% of Total Risk or HI	67.1	32.8	0.0	0.1		100.0	38.4	61.6	0.0	0.0		100.0

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Table 4J-44
Carcinogenic and Noncarcinogenic Risk Estimates for Current Long-Term On-Base Worker (chronic) Attributable to Control Tower Drum Storage Area, South: Reasonable Maximum Exposure Scenario

Analyte	Cancer Risk By Pathway						Hazard Index By Pathway					
	Surface Soil Pathways		Inhalation Pathways		Total Risk	% of Total Risk	Surface Soil Pathways		Inhalation Pathways		Hazard Index	% of Total Index
	Dermal Contact	Ingestion	Vapors	Dust			Dermal Contact	Ingestion	Vapors	Dust		
Metals												
Antimony	0	0	0	0	0	*0.0*	0	0	0	0	0	*0.0*
Thallium	0	0	0	0	0	*0.0*	9.4E-02	9.4E-02	0	0	1.9E-01	*97.7*
PNAs	0	0	0	0	0	*0.0*	0	0	0	0	0	*0.0*
2-Methylnaphthalene	0	0	0	0	0	*0.0*	0	0	0	0	0	*0.0*
Benzo(a)pyrene	0	6.9E-08	0	0	6.9E-08	*12.8*	0	0	0	0	0	*0.0*
Benzo(b)fluoranthene	0	1.1E-08	0	0	1.1E-08	*2.1*	0	0	0	0	0	*0.0*
Benzo(g,h,i)perylene	0	0	0	0	0	*0.0*	0	0	0	0	0	*0.0*
Phenanthrene	0	0	0	0	0	*0.0*	0	0	0	0	0	*0.0*
Pesticides	0	0	0	0	0	*0.0*	0	0	0	0	0	*0.0*
4,4'-DDT	1.8E-07	1.8E-08	0	2.9E-10	1.9E-07	*36.3*	2.9E-03	2.9E-04	0	0	3.2E-03	*1.7*
Aldrin	1.0E-07	1.0E-08	0	1.7E-10	1.2E-07	*21.5*	5.7E-04	5.7E-05	0	0	6.3E-04	*0.3*
Dieldrin	1.3E-07	1.3E-08	0	2.2E-10	1.5E-07	*27.2*	4.6E-04	4.6E-05	0	0	5.1E-04	*0.3*
TOTALS	4.1E-07	1.2E-07	0.0E+00	6.8E-10	**5.4E-07**	*100*	9.8E-02	9.4E-02	0.0E+00	0.0E+00	**1.9E-01**	*100*
% of Total Risk or HI	77.2	22.7	0.0	0.1		100.0	50.9	49.1	0.0	0.0		100.0

Table 4J-45

Carcinogenic and Noncarcinogenic Risk Estimates for Current On-Base Construction Worker (subchronic) Attributable to Control Tower Drum Storage Area, South: Average Exposure Scenario

Analyte	Cancer Risk By Pathway						Hazard Index By Pathway					
	Mixed Soil Pathways		Inhalation Pathways		Total Risk	% of Total Risk	Mixed Soil Pathways		Inhalation Pathways		Hazard Index	% of Total Index
	Dermal Absorption	Ingestion	Vapors	Dust			Dermal Absorption	Ingestion	Vapors	Dust		
Metals												
Antimony	0	0	0	0	0	*0.0*	3.0E-02	5.0E-02	0	0	7.9E-02	*94.3*
Thallium	0	0	0	0	0	*0.0*	0	0	0	0	0	*0.0*
PNAs	0	0	0	0	0	*0.0*	0	0	0	0	0	*0.0*
2-Methylnaphthalene	0	0	0	0	0	*0.0*	0	0	0	0	0	*0.0*
Benzo(a)pyrene	0	1.2E-09	0	0	1.2E-09	*17.5*	0	0	0	0	0	*0.0*
Benzo(b)fluoranthene	0	2.0E-10	0	0	2.0E-10	*2.9*	0	0	0	0	0	*0.0*
Benzo(g,h,i)perylene	0	0	0	0	0	*0.0*	0	0	0	0	0	*0.0*
Phenanthrene	0	0	0	0	0	*0.0*	0	0	0	0	0	*0.0*
Pesticides	0	0	0	0	0	*0.0*	0	0	0	0	0	*0.0*
4,4'-DDT	1.8E-09	3.1E-10	0	1.6E-10	2.3E-09	*34.0*	3.0E-03	5.0E-04	0	0	3.5E-03	*4.2*
Aldrin	1.1E-09	1.8E-10	0	9.5E-11	1.4E-09	*20.1*	6.0E-04	1.0E-04	0	0	7.0E-04	*0.8*
Dieldrin	1.4E-09	2.3E-10	0	1.2E-10	1.7E-09	*25.5*	4.8E-04	8.0E-05	0	0	5.6E-04	*0.7*
TOTALS	4.3E-09	2.1E-09	0.0E+00	3.7E-10	**6.8E-09**	*100*	3.4E-02	5.0E-02	0.0E+00	0.0E+00	**8.4E-02**	*100*
% of Total Risk or HI	63.4	31.0	0.0	5.5		100.0	40.2	59.8	0.0	0.0		100.0

Table 4J-46

Carcinogenic and Noncarcinogenic Risk Estimates for Current On-Base Construction Worker (subchronic) Attributable to Control Tower Drum Storage Area, South: Reasonable Maximum Exposure Scenario

Analyte	Cancer Risk By Pathway						Hazard Index By Pathway					
	Mixed Soil Pathways		Inhalation Pathways		Total Risk	% of Total Risk	Mixed Soil Pathways		Inhalation Pathways		Hazard Index	% of Total Index
	Dermal Absorption	Ingestion	Vapors	Dust			Dermal Absorption	Ingestion	Vapors	Dust		
Metals												
Antimony	0	0	0	0	0	*0.0*	5.0E-02	4.8E-01	0	0	5.3E-01	*97.5*
Thallium	0	0	0	0	0	*0.0*	0	0	0	0	0	*0.0*
PNAs	0	0	0	0	0	*0.0*	0	0	0	0	0	*0.0*
2-Methylnaphthalene	0	0	0	0	0	*0.0*	0	0	0	0	0	*0.0*
Benzo(a)pyrene	0	2.3E-08	0	0	2.3E-08	*41.1*	0	0	0	0	0	*0.0*
Benzo(b)fluoranthene	0	3.8E-09	0	0	3.8E-09	*6.9*	0	0	0	0	0	*0.0*
Benzo(g,h,i)perylene	0	0	0	0	0	*0.0*	0	0	0	0	0	*0.0*
Phenanthrene	0	0	0	0	0	*0.0*	0	0	0	0	0	*0.0*
Pesticides	0	0	0	0	0	*0.0*	0	0	0	0	0	*0.0*
4,4'-DDT	6.1E-09	5.9E-09	0	3.3E-10	1.2E-08	*22.2*	5.0E-03	4.8E-03	0	0	9.9E-03	*1.8*
Aldrin	3.6E-09	3.5E-09	0	2.0E-10	7.3E-09	*13.2*	1.0E-03	9.6E-04	0	0	2.0E-03	*0.4*
Dieldrin	4.6E-09	4.4E-09	0	2.5E-10	9.3E-09	*16.7*	8.0E-04	7.7E-04	0	0	1.6E-03	*0.3*
TOTALS	1.4E-08	4.0E-08	0.0E+00	7.8E-10	**5.6E-08**	*100*	5.6E-02	4.8E-01	0.0E+00	0.0E+00	**5.4E-01**	*100*
% of Total Risk or HI	25.8	72.8	0.0	1.4		100.0	10.5	89.5	0.0	0.0		100.0

Table 4J-47
Carcinogenic and Noncarcinogenic Risk Estimates for Future Boarding School Student (subchronic) Attributable to Control Tower Drum Storage Area, South: Average Exposure Scenario

Analyte	Cancer Risk By Pathway: Surface Soil Pathways: Dermal Contact	Cancer Risk By Pathway: Surface Soil Pathways: Ingestion	Cancer Risk By Pathway: Inhalation Pathways: Vapors	Cancer Risk By Pathway: Inhalation Pathways: Dust	Total Risk	% of Total Risk	Hazard Index By Pathway: Surface Soil Pathways: Dermal Contact	Hazard Index By Pathway: Surface Soil Pathways: Ingestion	Hazard Index By Pathway: Inhalation Pathways: Vapors	Hazard Index By Pathway: Inhalation Pathways: Dust	Hazard Index	% of Total Index
Metals												
Antimony	0	0	0	0	0	*0.0*	0	0	0	0	0	*#DIV/0!*
Thallium	0	0	0	0	0	*0.0*	0	0	0	0	0	*#DIV/0!*
Pesticides	0	0	0	0	0	*0.0*	0	0	0	0	0	*#DIV/0!*
4,4'-DDT	0	0	0	1.8E-13	1.8E-13	*42.5*	0	0	0	0	0	*#DIV/0!*
Aldrin	0	0	0	1.1E-13	1.1E-13	*25.4*	0	0	0	0	0	*#DIV/0!*
Dieldrin	0	0	0	1.4E-13	1.4E-13	*32.1*	0	0	0	0	0	*#DIV/0!*
PNAs	0	0	0	0	0	*0.0*	0	0	0	0	0	*#DIV/0!*
2-Methylnaphthalene	0	0	0	0	0	*0.0*	0	0	0	0	0	*#DIV/0!*
Benzo(a)pyrene	0	0	0	0	0	*0.0*	0	0	0	0	0	*#DIV/0!*
Benzo(b)fluoranthene	0	0	0	0	0	*0.0*	0	0	0	0	0	*#DIV/0!*
Benzo(g,h,i)perylene	0	0	0	0	0	*0.0*	0	0	0	0	0	*#DIV/0!*
Phenanthrene	0	0	0	0	0	*0.0*	0	0	0	0	0	*#DIV/0!*
TOTALS	0.0E+00	0.0E+00	0.0E+00	4.3E-13	**4.3E-13**	*100*	0.0E+00	0.0E+00	0.0E+00	0.0E+00	**0.0E+00**	*#DIV/0!*
% of Total Risk or HI	0.0	0.0	0.0	100.0		100.0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		#DIV/0!

Table 4J-48
Carcinogenic and Noncarcinogenic Risk Estimates for Future Boarding School Student (chronic) Attributable to Control Tower Drum Storage Area, South: Reasonable Maximum Exposure Scenario

Analyte	Cancer Risk By Pathway						Hazard Index By Pathway					
	Surface Soil Pathways		Inhalation Pathways		Total Risk	% of Total Risk	Surface Soil Pathways		Inhalation Pathways		Hazard Index	% of Total Index
	Dermal Contact	Ingestion	Vapors	Dust			Dermal Contact	Ingestion	Vapors	Dust		
Metals												
Antimony	0	0	0	0	0	*0.0*	0	0	0	0	0	*#DIV/0!*
Thallium	0	0	0	0	0	*0.0*	0	0	0	0	0	*#DIV/0!*
Pesticides	0	0	0	0	0	*0.0*	0	0	0	0	0	*#DIV/0!*
4,4'-DDT	0	0	0	6.4E-13	6.4E-13	*42.5*	0	0	0	0	0	*#DIV/0!*
Aldrin	0	0	0	3.8E-13	3.8E-13	*25.4*	0	0	0	0	0	*#DIV/0!*
Dieldrin	0	0	0	4.8E-13	4.8E-13	*32.1*	0	0	0	0	0	*#DIV/0!*
PNAs	0	0	0	0	0	*0.0*	0	0	0	0	0	*#DIV/0!*
2-Methylnaphthalene	0	0	0	0	0	*0.0*	0	0	0	0	0	*#DIV/0!*
Benzo(a)pyrene	0	0	0	0	0	*0.0*	0	0	0	0	0	*#DIV/0!*
Benzo(b)fluoranthene	0	0	0	0	0	*0.0*	0	0	0	0	0	*#DIV/0!*
Benzo(g,h,i)perylene	0	0	0	0	0	*0.0*	0	0	0	0	0	*#DIV/0!*
Phenanthrene	0	0	0	0	0	*0.0*	0	0	0	0	0	*#DIV/0!*
TOTALS	0.0E+00	0.0E+00	0.0E+00	1.5E-12	**1.5E-12**	*100*	0.0E+00	0.0E+00	0.0E+00	0.0E+00	**0.0E+00**	*#DIV/0!*
% of Total Risk or HI	0.0	0.0	0.0	100.0		100.0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		#DIV/0!

Table 4J-49
Carcinogenic and Noncarcinogenic Risk Estimates for Child Future Old Town Galena Resident (chronic) Attributable to Control Tower Drum Storage Area, South: Average Exposure Scenario

Analyte	Carcinogenic Risk Summary								
	Groundwater Pathways		Air Pathways			Food Pathways		Total Risk	% of Total Risk
			Vapors						
	Ingestion	Dermal Contact	Outdoor VOCs	Shower VOCs	Dust	Fruit	Vegetables		
Metals									
Antimony	0	0	0	0	0	0	0	0	0.0
Thallium	0	0	0	0	0	0	0	0	0.0
Pesticides	0	0	0	0	0	0	0	0	0.0
4,4'-DDT	0	0	0	0	2.3E-14	0	0	2.3E-14	0.0
Aldrin	3.4E-08	4.7E-11	0	8.7E-17	1.4E-14	3.3E-09	5.8E-09	4.3E-08	33.9
Dieldrin	0	0	0	0	1.7E-14	0	0	1.7E-14	0.0
Heptachlor epoxide	5.2E-08	5.0E-10	0	7.1E-12	0	4.2E-09	7.3E-09	6.5E-08	51.2
PNAs	0	0	0	0	0	0	0	0	0.0
2-Methylnaphthalene	0	0	0	0	0	0	0	0	0.0
Benzo(a)pyrene	0	0	0	0	0	0	0	0	0.0
Benzo(b)fluoranthene	0	0	0	0	0	0	0	0	0.0
Benzo(g,h,i)perylene	0	0	0	0	0	0	0	0	0.0
Phenanthrene	0	0	0	0	0	0	0	0	0.0
Volatiles	0	0	0	0	0	0	0	0	0.0
Trichloroethene	1.5E-08	2.6E-09	0	8.0E-11	0	3.4E-10	6.0E-10	1.9E-08	14.9
TOTALS	1.0E-07	3.2E-09	0.0E+00	8.7E-11	5.4E-14	7.9E-09	1.4E-08	**1.3E-07**	**100**
% of Total Risk or HI	80.2	2.5	0.0	0.1	0.0	6.3	10.9		100.0

Table 4J-49
(Continued)

Analyte	Non-Carcinogenic Risk Summary								
	Groundwater Pathways		Air Pathways			Food Pathways		Hazard Index	% of Total Index
			Vapors						
	Ingestion	Dermal Contact	Outdoor VOCs	Shower VOCs	Dust	Fruit	Vegetables		
Metals									
Antimony	0	0	0	0	0	0	0	0.0000	0.0
Thallium	0	0	0	0	0	0	0	0.0000	0.0
Pesticides	0	0	0	0	0	0	0	0.0000	0.0
4,4'-DDT	0	0	0	0	0	0	0	0.0000	0.0
Aldrin	7.7E-04	1.1E-06	0	0	0	7.7E-05	1.3E-04	0.0010	9.2
Dieldrin	0	0	0	0	0	0	0	0.0000	0.0
Heptachlor epoxide	5.2E-03	5.0E-05	0	0	0	4.2E-04	7.2E-04	0.0064	59.7
PNAs	0	0	0	0	0	0	0	0.0000	0.0
2-Methylnaphthalene	0	0	0	0	0	0	0	0.0000	0.0
Benzo(a)pyrene	0	0	0	0	0	0	0	0.0000	0.0
Benzo(b)fluoranthene	0	0	0	0	0	0	0	0.0000	0.0
Benzo(g,h,i)perylene	0	0	0	0	0	0	0	0.0000	0.0
Phenanthrene	0	0	0	0	0	0	0	0.0000	0.0
Volatiles	0	0	0	0	0	0	0	0.0000	0.0
Trichloroethene	2.7E-03	4.7E-04	0	0	0	6.1E-05	1.1E-04	0.0033	31.1
TOTALS	8.6E-03	5.2E-04	0.0E+00	0.0E+00	0.0E+00	5.6E-04	9.6E-04	0.0107	100.0
% of Total Risk or HI	80.9	4.9	0.0	0.0	0.0	5.2	9.0		100.0

Table 4J-50

Carcinogenic and Noncarcinogenic Risk Estimates for Child Future Old Town Galena Resident (chronic) Attributable to Control Tower Drum Storage Area, South: Reasonable Maximum Exposure Scenario

Analyte	Carcinogenic Risk Summary									
	Groundwater Pathways		Air Pathways				Food Pathways		Total Risk	% of Total Risk
			Vapors		Dust					
	Ingestion	Dermal Contact	Outdoor VOCs	Shower VOCs	Surface Soil	Mixed Soil	Fruit	Vegetables		
Metals										
Antimony	0	0	0	0	0	0	0	0	0	0.0
Thallium	0	0	0	0	0	0	0	0	0	0.0
Pesticides	0	0	0	0	0	0	0	0	0	0.0
4,4'-DDT	0	0	0	0	2.9E-14	0	0	0	2.9E-14	0.0
Aldrin	4.3E-08	8.5E-11	0	5.4E-16	1.8E-14	0	1.0E-08	1.4E-08	6.7E-08	34.8
Dieldrin	0	0	0	0	2.2E-14	0	0	0	2.2E-14	0.0
Heptachlor epoxide	6.7E-08	9.1E-10	0	4.8E-11	0	0	1.3E-08	1.8E-08	9.9E-08	51.1
PNAs	0	0	0	0	0	0	0	0	0	0.0
2-Methylnaphthalene	0	0	0	0	0	0	0	0	0	0.0
Benzo(a)pyrene	0	0	0	0	0	0	0	0	0	0.0
Benzo(b)fluoranthene	0	0	0	0	0	0	0	0	0	0.0
Benzo(g,h,i)perylene	0	0	0	0	0	0	0	0	0	0.0
Phenanthrene	0	0	0	0	0	0	0	0	0	0.0
Volatiles	0	0	0	0	0	0	0	0	0	0.0
Trichloroethene	1.9E-08	4.8E-09	0	5.4E-10	0	0	1.1E-09	1.4E-09	2.7E-08	14.1
TOTALS	1.3E-07	5.8E-09	0.0E+00	5.9E-10	6.9E-14	0.0E+00	2.5E-08	3.3E-08	**1.9E-07**	**100**
% of Total Risk or HI	66.8	3.0	0.0	0.3	0.0	0.0	12.8	17.1		100.0

Table 4J-50
(Continued)

Analyte	Non-Carcinogenic Risk Summary: Groundwater Pathways		Air Pathways			Food Pathways		Hazard Index	% of Total Index
	Ingestion	Dermal Contact	Outdoor VOCs	Shower VOCs	Dust	Fruit	Vegetables		
Metals									
Antimony	0	0	0	0	0	0	0	0.0000	0.0
Thallium	0	0	0	0	0	0	0	0.0000	0.0
Pesticides	0	0	0	0	0	0	0	0.0000	0.0
4,4'-DDT	0	0	0	0	0	0	0	0.0000	0.0
Aldrin	9.8E-04	1.9E-06	0	0	0	2.4E-04	3.2E-04	0.0015	9.6
Dieldrin	0	0	0	0	0	0	0	0.0000	0.0
Heptachlor epoxide	6.6E-03	9.0E-05	0	0	0	1.3E-03	1.7E-03	0.0097	60.9
PNAs	0	0	0	0	0	0	0	0.0000	0.0
2-Methylnaphthalene	0	0	0	0	0	0	0	0.0000	0.0
Benzo(a)pyrene	0	0	0	0	0	0	0	0.0000	0.0
Benzo(b)fluoranthene	0	0	0	0	0	0	0	0.0000	0.0
Benzo(g,h,i)perylene	0	0	0	0	0	0	0	0.0000	0.0
Phenanthrene	0	0	0	0	0	0	0	0.0000	0.0
Volatiles	0	0	0	0	0	0	0	0.0000	0.0
Trichloroethene	3.4E-03	8.4E-04	0	0	0	1.9E-04	2.5E-04	0.0047	29.4
TOTALS	1.1E-02	9.4E-04	0.0E+00	0.0E+00	0.0E+00	1.7E-03	2.3E-03	0.0160	100.0
% of Total Risk or HI	68.8	5.9	0.0	0.0	0.0	10.9	14.5		100.0

Table 4J-51

Carcinogenic and Noncarcinogenic Risk Estimates for Adult Future Old Town Galena Resident (chronic) Attributable to Control Tower Drum Storage Area, South: Average Exposure Scenario

Analyte	Carcinogenic Risk Summary								
	Groundwater Pathways		Air Pathways			Food Pathways		Total Risk	% of Total Risk
			Vapors						
	Ingestion	Dermal Contact	Outdoor VOCs	Shower VOCs	Dust	Fruit	Vegetables		
Metals									
Antimony	0	0	0	0	0	0	0	0	0.0
Thallium	0	0	0	0	0	0	0	0	0.0
Pesticides	0	0	0	0	0	0	0	0	0.0
4,4'-DDT	0	0	0	0	9.4E-14	0	0	9.4E-14	0.0
Aldrin	4.1E-08	1.1E-10	0	2.1E-16	5.6E-14	3.8E-09	3.1E-09	4.8E-08	32.5
Dieldrin	0	0	0	0	7.1E-14	0	0	7.1E-14	0.0
Heptachlor epoxide	6.4E-08	1.2E-09	0	1.7E-11	0	4.8E-09	3.9E-09	7.4E-08	50.1
PNAs	0	0	0	0	0	0	0	0	0.0
2-Methylnaphthalene	0	0	0	0	0	0	0	0	0.0
Benzo(a)pyrene	0	0	0	0	0	0	0	0	0.0
Benzo(b)fluoranthene	0	0	0	0	0	0	0	0	0.0
Benzo(g,h,i)perylene	0	0	0	0	0	0	0	0	0.0
Phenanthrene	0	0	0	0	0	0	0	0	0.0
Volatiles	0	0	0	0	0	0	0	0	0.0
Trichloroethene	1.9E-08	6.4E-09	0	2.0E-10	0	3.9E-10	3.2E-10	2.6E-08	17.4
TOTALS	1.2E-07	7.7E-09	0.0E+00	2.1E-10	2.2E-13	9.1E-09	7.3E-09	**1.5E-07**	**100**
% of Total Risk or HI	83.6	5.2	0.0	0.1	0.0	6.1	4.9		100.0

Table 4J-51
(Continued)

Analyte	Non-Carcinogenic Risk Summary								
	Groundwater Pathways		Air Pathways			Food Pathways		Hazard Index	% of Total Index
			Vapors						
	Ingestion	Dermal Contact	Outdoor VOCs	Shower VOCs	Dust	Fruit	Vegetables		
Metals									
Antimony	0	0	0	0	0	0	0	0.0000	0.0
Thallium	0	0	0	0	0	0	0	0.0000	0.0
Pesticides	0	0	0	0	0	0	0	0.0000	0.0
4,4'-DDT	0	0	0	0	0	0	0	0.0000	0.0
Aldrin	2.3E-04	6.3E-07	0	0	0	2.1E-05	1.7E-05	0.0003	8.5
Dieldrin	0	0	0	0	0	0	0	0.0000	0.0
Heptachlor epoxide	1.6E-03	2.9E-05	0	0	0	1.2E-04	9.5E-05	0.0018	56.5
PNAs	0	0	0	0	0	0	0	0.0000	0.0
2-Methylnaphthalene	0	0	0	0	0	0	0	0.0000	0.0
Benzo(a)pyrene	0	0	0	0	0	0	0	0.0000	0.0
Benzo(b)fluoranthene	0	0	0	0	0	0	0	0.0000	0.0
Benzo(g,h,i)perylene	0	0	0	0	0	0	0	0.0000	0.0
Phenanthrene	0	0	0	0	0	0	0	0.0000	0.0
Volatiles	0	0	0	0	0	0	0	0.0000	0.0
Trichloroethene	8.0E-04	2.8E-04	0	0	0	1.7E-05	1.4E-05	0.0011	35.0
TOTALS	2.6E-03	3.1E-04	0.0E+00	0.0E+00	0.0E+00	1.6E-04	1.3E-04	0.0032	100.0
% of Total Risk or HI	81.5	9.6	0.0	0.0	0.0	4.9	4.0		100.0

Table 4J-52
Carcinogenic and Noncarcinogenic Risk Estimates for Adult Future Old Town Galena Resident (chronic) Attributable to Control Tower Drum Storage Area, South: Reasonable Maximum Exposure Scenario

Analyte	Carcinogenic Risk Summary								
	Groundwater Pathways		Air Pathways			Food Pathways		Total Risk	% of Total Risk
			Vapors						
	Ingestion	Dermal Contact	Outdoor VOCs	Shower VOCs	Dust	Fruit	Vegetables		
Metals									
Antimony	0	0	0	0	0	0	0	0	0.0
Thallium	0	0	0	0	0	0	0	0	0.0
Pesticides	0	0	0	0	0	0	0	0	0.0
4,4'-DDT	0	0	0	0	3.4E-13	0	0	3.4E-13	0.0
Aldrin	2.1E-07	5.8E-10	0	3.8E-15	2.0E-13	3.3E-08	2.6E-08	2.7E-07	33.0
Dieldrin	0	0	0	0	2.6E-13	0	0	2.6E-13	0.0
Heptachlor epoxide	3.3E-07	6.2E-09	0	3.4E-10	0	4.2E-08	3.2E-08	4.1E-07	50.2
PNAs	0	0	0	0	0	0	0	0	0.0
2-Methylnaphthalene	0	0	0	0	0	0	0	0	0.0
Benzo(a)pyrene	0	0	0	0	0	0	0	0	0.0
Benzo(b)fluoranthene	0	0	0	0	0	0	0	0	0.0
Benzo(g,h,i)perylene	0	0	0	0	0	0	0	0	0.0
Phenanthrene	0	0	0	0	0	0	0	0	0.0
Volatiles	0	0	0	0	0	0	0	0	0.0
Trichloroethene	9.6E-08	3.3E-08	0	3.8E-09	0	3.4E-09	2.6E-09	1.4E-07	16.8
TOTALS	6.4E-07	4.0E-08	0.0E+00	4.1E-09	8.0E-13	7.8E-08	6.1E-08	**8.3E-07**	**100**
% of Total Risk or HI	77.9	4.8	0.0	0.5	0.0	9.5	7.4		100.0

Table 4J-52
(Continued)

Analyte	Non-Carcinogenic Risk Summary								
	Groundwater Pathways		Air Pathways			Food Pathways		Hazard Index	% of Total Index
			Vapors						
	Ingestion	Dermal Contact	Outdoor VOCs	Shower VOCs	Dust	Fruit	Vegetables		
Metals									
Antimony	0	0	0	0	0	0	0	0.0000	0.0
Thallium	0	0	0	0	0	0	0	0.0000	0.0
Pesticides	0	0	0	0	0	0	0	0.0000	0.0
4,4'-DDT	0	0	0	0	0	0	0	0.0000	0.0
Aldrin	4.2E-04	1.1E-06	0	0	0	6.5E-05	5.0E-05	0.0005	8.8
Dieldrin	0	0	0	0	0	0	0	0.0000	0.0
Heptachlor epoxide	2.8E-03	5.3E-05	0	0	0	3.5E-04	2.7E-04	0.0035	57.5
PNAs	0	0	0	0	0	0	0	0.0000	0.0
2-Methylnaphthalene	0	0	0	0	0	0	0	0.0000	0.0
Benzo(a)pyrene	0	0	0	0	0	0	0	0.0000	0.0
Benzo(b)fluoranthene	0	0	0	0	0	0	0	0.0000	0.0
Benzo(g,h,i)perylene	0	0	0	0	0	0	0	0.0000	0.0
Phenanthrene	0	0	0	0	0	0	0	0.0000	0.0
Volatiles	0	0	0	0	0	0	0	0.0000	0.0
Trichloroethene	1.5E-03	5.0E-04	0	0	0	5.1E-05	4.0E-05	0.0020	33.7
TOTALS	4.7E-03	5.5E-04	0.0E+00	0.0E+00	0.0E+00	4.7E-04	3.6E-04	0.0061	100.0
% of Total Risk or HI	77.3	9.0	0.0	0.0	0.0	7.7	6.0		100.0

APPENDIX 4K

ECOLOGICAL ASSESSMENT EXPOSURE PARAMETERS

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APPENDIX 4K
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4K.1 INTRODUCTION

Constants used in the exposure assessment for the ERA are listed below. Assessment endpoint species contaminant intake is detailed in Section 3.2.3 of Volume 1. Spreadsheets showing the calculations are shown in Appendix 4M. The size of the sites are shown in Table 4K-1. The areas were also used in the intake estimation. Areas are based on the extent of soil contamination.

4K.1.1 Meadow Vole

The values used to calculate meadow vole exposure are:

- Body weight: 0.039 kilograms (EPA, 1993);
- Water intake: 0.0053 Liters per day (calculated using methodology in Section 3.2.3);
- Food ingestion rate: 0.0049 kilograms dry matter per day (calculated using methodology in Section 3.2.3);
- Percent of food from contaminated source: 100%;
- Fraction of food in diet: 0.97;
- Fraction of soil in diet: 0.024 (Beyer et al., 1993); and
- Home range: 0.034 acres (EPA, 1993).

4K.1.2 Spotted Sandpiper

The values used to calculate spotted sandpiper intake are:

- Body Weight: 0.047 kilograms (EPA, 1993);
- Water intake: 0.67 Liters per day (calculated using methodology in Section 3.2.3);

Table 4K-1
Site Areas

Site or Source Area	Acres
Southeast Runway Fuel Spill	6.32
CTDSA	3.78

- Food ingestion rate for seabirds: 0.00744 kilograms dry matter per day (calculated using methodology in Section 3.2.3);
- Fraction of food in diet: 0.82;
- Fraction of soil in diet: 0.18 (value for western sandpiper, Beyer et al, 1994);
- Home range: 2.5 acres (CDFG, 1990); and
- Time on site: 5 months (May - September, Robbins, 1983).

4KI.1.3 Red Fox

The values used to calculate red fox intake are:

- Body weight: 5.25 kg (male, EPA, 1993);
- Water intake: 0.44 Liters/day (calculated using methodology in Section 3.2.3);
- Food ingestion rate: 0.268 kilograms dry matter/day (calculated using methodology in Section 3.2.3);
- Percent of food from contaminated source: 100%;
- Fraction of food in diet: 0.97;
- Fraction of soil in diet: 0.028 (Beyer et al., 1993); and
- Home range: 1771 acres (EPA, 1993).

4K.1.4 Robin

The values used to calculate robin intake are:

- Body weight: 0.077 kilograms (Dunning, 1993);

- Water intake: 0.0105 Liters/day (calculated using methodology in Section 3.2.3);
- Food ingestion rate: 0.01597 kilograms dry matter/day (calculated using methodology in Section 3.2.3);]
- Percent of food from contaminated source: 100%;
- Fraction of food in diet: 0.896;
- Fraction of soil in diet: 0.104 (Woodcock, Beyer et al., 1993); and
- Home range: 2.00 acres (foraging home range - fledglings, EPA, 1993).

4K.1.5 American Kestrel

The values used to calculate American kestrel intake are:

- Body weight: 0.120 kilograms (female, Dunning, 1993);
- Water intake: 0.014 Liters/day (calculated using methodology in Section 3.2.3);
- Food ingestion rate: 0.01096 kilograms dry matter/day (calculated using methodology in Section 3.2.3);
- Percent of food from contaminated source: 100%;
- Fraction of food in diet: 0.90;
- Fraction of soil in diet: 0.10; and
- Home range: 499 acres (EPA,1993).; and
- Time on site: 6 months.

4K.1.6 Northern Pike

Northern Pike intake was not assessed, therefore no intake parameters are listed.

4K.1.7 Invertebrates (Aquatic and Terrestrial)

Invertebrate intake was not assessed, therefore no intake parameters are listed.

4K.2 REFERENCES

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U.S. Environmental Protection Agency (EPA) *Wildlife Exposure Factors Handbook.* EPA/600/R-93/187a, 1993.

California Department of Fish and Game (CDFG), *California's Wildlife*, Volume 2. California Statewide Wildlife Habitat Relationship System, 1990.

Dunning, J.B. (Editor) *CRC Handbook of Avian Body Masses.* CRC Press. Boca Raton, Fl. 1993.

APPENDIX 4L

ECOLOGICAL ASSESSMENT TOXICITY PROFILES

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APPENDIX 4L
LIST OF TABLES (Continued)

Table 4L-1

Ecological Toxicity Profile for Benzene

Organism	Dose	Exposure Route	Exposure Period	Effect	Endpoint	Reference
Benzene						
Rat		Inhalation	4 hours	Death	LC_{50} = 13700 ppm	1
Rabbit		Inhalation	GD 7-20, 24 hours/day	Decreased fetal weight	LOAEL = 313 ppm	1
Mouse		Inhalation	GD 6-15, 7 hours/day	Decreased fetal weight	LOAEL = 500 ppm	1
Rat		Oral-food	1 day	Death	LD_{50} = 930 mg/kg/day	1
Mouse		Gavage-oil	GD 8-12	Decreased fetal weight	LOAEL = 1300 mg/kg/day	1
Freshwater aquatic organism			Acute	Proposed AWQC-protection of aquatic life	LOAEL = 5300 μg/l	2
Saltwater aquatic organism			Chronic	Proposed AWQC-protection of aquatic life	LOAEL = 700 μg/l	2
Meadow vole					NOAEL = 23.23 mg/kg/day	3
Red fox					NOAEL = 5.04 mg/kg/day	3
Grass shrimp *(Paleamonetes pugio)*			96 hours	Death	LC_{50} = 27 ppm	4
Bluegill sunfish *(Lepomis macrochirus)*			24-48 hours	Death	LD_{50} = 20 mg/l	4

Table 4L-1

(Continued)

Organism	Dose	Exposure Route	Exposure Period	Effect	Endpoint	Reference
Benzene						
Goldfish *(Carassius auratus)*			24 hours	Death	LD_{50} = 46 mg/l	4
Guppy *(Poecilia reticulata)*			14 days	Death	LC_{50} = 63 ppm	4

Benzene, also known as benzol, evaporates into air quickly and dissolves easily in water. Benzene found in the environment is from both natural processes and human activities. Natural sources, which include volcanoes and forest fires, account for a small amount of benzene in the environment. Benzene is also a natural part of crude oil. It is used widely and is ranked in the top 20 in production volume for chemicals produced in the United States. Most of the benzene is produced from petroleum sources. Various industries use benzene to make other chemicals, such as styrene, cumene, and cyclohexane. Benzene is also used for the manufacturing of some types of rubber, lubricants, dyes, detergents, drugs, and pesticides. The high volatility and water solubility of benzene are the physical properties with the greatest influence on environmental transport and partitioning. Benzene released to soil surfaces partitions to the atmosphere through volatilization to surface water through runoff and to groundwater as a result of leaching. Benzene is considered highly mobile. On the basis of a reported log K_{ow} of 2.13 and an estimated BCF of 24, benzene is not expected to bioconcentrate to any great extent in aquatic organisms. On the basis of estimated and measured BCFs, biomagnification in aquatic food chains does not appear to be important. Evidence exists for the uptake of benzene by cress and barley plants from soil; however, because benzene exists primarily in the vapor phase, root uptake is not expected to be a major source of vegetative contamination. Air to leaf is expected to be the major pathway of vegetative contamination. Benzene is biodegradable in surface water and soil under aerobic conditions (1).

Bioconcentration:
- General BCF (estimated) = 24
- Barley plant BCF = 17
- Cress plant BCF = 10
- Goldfish BCF = 4.24 (1)

Environmental Fate:
- Log K_{oc} = 1.8-1.9
- Log K_{ow} = 2.13
- Henry's Law Constant = 5.5×10^{-3} atm m^3/mol at 20°C
- Water Solubility = 1,780 mg/l at 25°C
- Vapor Pressure at 25°C = 95.2 mmHg
- Henry's Law Constant at 25°C = 5.5×10^{-3} atm-m^3/moL

References:
1. Agency for Toxic Substances and Disease Registry (ATSDR). 1992. *Toxicological Profile for Benzene.*
2. U.S. Environmental Protection Agency (EPA), Office of Science and Technology, Health and Ecological Criteria Division, Washington, D.C. 1991. Water quality criteria summary. *Federal Register* Notice 57FR60911.
3. Oak Ridge National Laboratory, Environmental Sciences and Health Science Research Division, Oak Ridge, Tn. 1994. *Screening Benchmarks for Ecological Risk Assessment.*
4. U.S. Department of Health and Human Services, Bethesda, Md. 1995. Hazardous Substances Data Base (HSDB) On-Line Computer Database.

Table 4L-2

Ecological Toxicity Profile for Benzo(a)anthracene

Organism	Dose	Exposure Route	Exposure Period	Effect	Endpoint	Reference
Benzo(a)anthracene						
Rat	180 mg/kg	Oral	Acute	Oncogenic transformation		1
Mouse	18 mg/kg	Dermal	Acute	Skin tumors		2
Mouse	2 mg/kg	Subcutaneous	Acute	Tumors at site of application		3
Rat		Intravaneous	1 Injection	Death	LD_{50} > 200 mg/kg	4
Bluegill (*Lepomis macrochirus*)		Medium	87 hours	Death	LC_{87} =1000 μg/L	6
Mouse		Dermal	3 per week for 50 weeks	Skin tumors	LOAEL = 0.15 mg/kg-BW	5
Rodent	2 mg/kg	Oral	Chronic	Carcinogenic		6
Mouse	1 mg	Dermal		Carcinogenic		6
Mouse	5 mg	Subcutaneous	Single	Carcinogenic		6
Mouse	2 mg	Gavage	2 Days	Increase hepatomas and pulmonary adenomas		7
Mouse	1.5 mg/kg	Gavage	Intermittent over 5 weeks	Increase hepatomas and pulmonary adenomas		7

Benzo(a)anthracene (B(a)a) is a polycyclic aromatic hydrocarbon (PAH) which is a byproduct of incomplete combustion. B(a)a binds strongly to soil and sediment (K_{ow}= 4.1x10^5 and K_{oc}= 2x10^5). Biodegradation is slow in soils and sediment. The half-life is approximately 1 year. B(a)a is strongly adsorbed by bacteria (9). B(a)a is not expected to bioconcentrate or bioaccumulate. Laboratory studies on experimental animals indicate that B(a)a is potentially carcinogenic following oral exposure. It has been shown to be carcinogenic following intermediate-term dermal exposure. The majority of genotoxicity tests have shown positive results, although some have also been negative. 33% of the B(a)a added to the water column of a controlled ecosystem was recovered in the sediment a week later (9). In atmospheric samples, B(a)a is found adsorbed to particulate matter and in the vapor phase (9).

Table 4L-2

(Continued)

Bioaccumulation:
- Daphnia Log BCF = 4.0 (9)
- Earthworm BCF = 0.125 (8)
- Oyster Log BCF = 3.03 (9)

Bioconcentration:
•Cladacoeran (*Daphnia pulex*) BCF = 10,109 (24-hr)

Environmental Fate:
- $K_{oc} = 0.55 \times 10^6 - 1.87 \times 10^3$ (9)
- Log K_{ow} = 5.61 (9)

References:

1. *Cancer Res.*, vol 40, pg. 1157 (1980).
2. *Cancer Res.*, vol 38, pg. 1699 (1978).
3. *Cancer Res.*, vol 15, pg. 632, (1955).
4. *Mol. Pharmacol.*, vol 4, pg 427, (1968).
5. ICF-Clement. 1990. *Toxicological Profile for Benz(a)anthracene.*
6. Eisler, R. 1987. Polycyclic aromatic hydrocarbon hazards to fish, wildlife, invertebrates: a synoptic review. *U.S. Fish Wild. Serv. Biol. Rep.* 85 (1.11), 81 pp.
7. Agency for Toxic Substances and Disease Registry (ATSDR). 1989. *Toxicological Profile for Polycyclic Aromatic Hydrocarbons.*
8. Beyer, W.N. 1990. Evaluating soil contamination. *U.S. Fish Wild. Serv. Biol. Rep.* 90(2), 25 pp.
9. U.S. Department of Health and Human Services, Bethesda, Md. 1995. Hazardous Substances Data Base (HSDB) On-Line Computer Database.

Table 4L-3

Ecological Toxicity Profile for Benzo(a)pyrene

Organism	Dose	Exposure Route	Exposure Period	Effect	Endpoint	Reference
Benzo(a)pyrene						
Rat		Oral	Acute	Death	LD_{50} = 50 mg/kgBW	1
Rodent	0.002 mg/kg	Oral	Chronic	Tumor formation		1
Mouse	5 mg/kg/d	Oral	Intermediate	Cancer 15 -365 days		1
Mouse	10 mg/kg/d	Oral	GD 7-16	Reduced pup weights and reproductive alterations		2
Mouse	5.2 mg/kg/d	Oral-food	110 Days	Forestomach tumors		3
Mouse	33.3 mg/kg/d	Oral-food	Intermediate	Stomach cancer, lung tumors, leukemia		3
Mallard	0.036 μg/ kg-whole egg	PAH mixture applied to external surface of egg		Reduction in embryonic growth, increased number of abnormal survivors		1
Hamster	500 ppm	Oral-food	4 days/week for 14 months	Tumorigenic		4
Mouse		Intraperitoneal	Acute	Death	LD_{50} = 250 mg/kg	5
Duck	50 - 200 mg	Intratracheal		Reduced survival rate		6
Mouse	40 - 160 mg/kg		GD 7-16	Female sterility		7

Table 4L-3

(Continued)

Organism	Dose	Exposure Route	Exposure Period	Effect	Endpoint	Reference
Benzo(a)pyrene						
Rat		Oral		Tumorigenic Gastrointestinal Musculo-skelatal	TD_{LO} = 15 mg/kg	8
Mouse		Oral		Tumorigenic, lung and thorax	TD_{LO} = 700 mg/kg	9
Hamster		Oral		Tumorigenic Gastrointestinal	TD_{LO} = 420 mg/kg	10
Meadow vole					NOAEL = 0.881 mg/kg/day	14
Red fox					NOAEL = 0.191 mg/kg/day	14
Rat		Oral		Embryonic or fetal effects	TD_{LO} = 40 mg/kg	11
Sandworm (*Neanthes grenceodentata*)			96 hours	Death	LC_{50} > 1000 μg/L	
Mouse		Oral		Decreased litter and male/female sterility	TD_{LO} = 100 mg/kg	12
Mouse	40 mg/kg/d	Gavage	10 days during gestation	Reduced pup weights at 20 days		2

Benzo(a)pyrene B(a)P is a polycyclic aromatic hydrocarbon (PAH) present in the environment as a byproduct of incomplete combustion. Some microbes have also demonstrated the ability to synthesize B(a)P. The majority of B(a)P present in the environment is due to releases into the atmosphere. B(a)P that deposits on land and water will partition primarily to soil and sediment, where it is very persistent (K_{ow}=1.55x10^6 and K_{oc}=5.5x10^6). Biodegradation is the principle route of B(a)P degradation in soil and sediment. The process is slow, with a $T_{1/2}$ of approximately 290 days (soil). B(a)P has been shown to be acutely toxic in high doses. The primary endpoint of concern is cancer. B(a)P has been shown to cause cancer in experimental animals through exposure via inhalation, dermal application and ingestion. In addition, B(a)P is a recognized genotoxic and mutagenic agent and is a suspected human carcinogen (2).

Table 4L-3

(Continued)

Bioaccumulation:
- Earthworm BAF = 0.342 (13)

Bioconcentration:
- Clam (*Rongia cuneata*) BCF (24 hrs.) = 9-236
- Bluegill BCF (4 hrs.) = 12
- Atlantic salmon, egg BCF (168 hrs.) = 71
- Oyster BCF (14 days) = 242
- Northern pike BCF (3.3 hrs.) = 3974

References:

1. Eisler, R. 1987. Polycyclic aromatic hydrocarbon hazards to fish, wildlife, and invertebrates: a synoptic review. *U.S. Fish Wild. Serv. Biol. Rep.* 85(1.11), 81 pp.

2. ICF-Clement. 1987. *Toxicological Profile for Benzo(a)pyrene.*

3. Agency for Toxic Substances and Disease Registry (ATSDR). 1989. *Toxicological Profile for Polcyclic Aromatic Hydrocarbons.*

4. IARC Monographs on the evaluation of carcinogenic risk of chemicals to man. V3 104 (1973).

5. IARC Monographs on the evaluation of carcinogenic risk of chemicals to man. V32 213 (1983).

6. IARC Monographs on the evaluation of carcinogenic risk of chemicals to man. V3 109 (1983).

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13. Beyer, W.N. 1990. Evaluating soil contamination. *U.S. Fish Wild. Serv. Biol. Rep.* 90(2), 25 pp.

14. Oak Ridge National Labs, Oak Ridge, Tn., Environmental Sciences and Health Sciences Research Division. 1994. *Screening Benchmarks for Ecological Risk Assessment.*

Table 4L-4

Ecological Toxicity Profile for Benzo(b)fluoranthene

Organism	Dose	Exposure Route	Exposure Period	Effect	Endpoint	Reference
Benzo(b)fluoranthene						
Rodent	40 mg/kg	Oral	Chronic	Carcinogenic		1
Rat	1 mg	Injection into lung	Single application, time release	Lung tumors		2
Mouse	1.2 mg/kg	Dermal application	3/week, lifetime	Skin tumors		2
Mouse	0.6 mg	Subcutaneous injection	3 injections/ 2 months	Sarcoma		3
Chicken	10 μg/egg	Injection into yolk sac through egg shell	Single injection	Decrease in hatchability		4
Chicken	15 ppm	Injection into developing embryo	Single injection, near term	Decreased survival rate		5

Benzo(b)fluoranthene [B(b)F] is a polycyclic aromatic hydrocarbon (PAH) that is a byproduct of incomplete combustion. In the environment, B(b)F adsorbs strongly to soil and sediment (K_{ow}=1.15x10^6, K_{oc}=5.5x10^5). It is considered immobile in soil. Leaching to groundwater is not expected. Bioaccumulation in vertebrate organisms is considered to be short-term and is not considered an important fate process; however, organisms which lack a metabolic detoxification enzyme system, namely phytoplankton, certain zooplankton, mussels *(Mytilus edulis)*, scallops *(Placopecten sp.)*, and snails *(Litternia littorea)*, tend to accumulate PAHs (7). The high estimated K_{ow} suggests that B(b)F will bioconcentrate appreciably in aquatic organisms. The presence of microsomal oxidase in fish suggests, however, that the PAHs, including B(b)F, will not bioconcentrate in fish due to the anticipated rapid metabolism of these compounds. (7) The major fate of sediment-bound B(b)F is most likely biodegradation. The $T_{1/2}$ in soil is estimated to be approximately 610 days. Volatilization from soil is not expected to be significant (7). Limited lethality, systemic or reproductive toxicity data is available for B(b)F. Experimental evidence exists that B(b)F is a skin carcinogen in animals following dermal application or subcutaneous injection. B(b)F is considered a probable human carcinogen.

Bioaccumulation:
- Earthworm BAF = 0.32 (6)

Table 4L-4

(Continued)

Environmental Fate:

- Log K_{oc} = 5.88 (7)
- Log K_{ow} = 6.124 (7)
- Henry's Law Constant = 1.38×10^{-4} atm m^3/mol (7)
- Vapor pressure = 5.0×10^{-7} mm Hg (7)
- Water solubility = 0.0012 mg/l (7)

References:

1. Eisler, R. 1987. Polycyclic aromatic hydrocarbon hazards to fish, wildlife, invertebrates: a synoptic review. *U.S. Fish Wildl. Serv. Biol. Rep.* 85(1.11), 81 pp.

2. Agency for Toxic Substances and Disease Registry. (ATSDR). 1989. *Toxicological Profile for Polycyclic Aromatic Hydrocarbons.*

3. *Research on Cancer*, V# 74 (1973).

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6. Beyer, W.N. 1990. Evaluating soil contamination. *U.S. Fish Wildl. Serv. Biol. Rep.* 90(2), 25 pp.

7. U.S. Department of Health and Human Services, Bethesda, Md. 1995. Hazardous Substances Data Base (HSDB) On-Line Computer Database.

Table 4L-5

Ecological Toxicity Profile for Benzo(g,h,i)perylene

Organism	Dose	Exposure Route	Exposure Period	Effect	Endpoint	Reference
Benzo(g,h,i)perylene						
Rat	5 mg	Lung implant		No tumor formation		1
Mouse	0.8 mg	Dermal		Carcinogenic		2
Rat		Interperitoneal		Tumor		3

Benzo(g,h,i)perylene [B(ghi)P] is a polycyclic aromatic hydrocarbon (PAH), that is a byproduct of incomplete combustion. In the environment, B(ghi)P is expected to adsorb strongly to soil and organic materials in sediment ($K_{ow}=3.2x10^6$, $K_{oc}=1.6x10^6$). Adsorption to suspended particulate matter and sediments is an important environmental process. Movement by sediment-sorbed B(ghi)P is probably an important transport process for this compound. B(ghi)P is highly immobile in soil. (5) The half-life in aerobic soils is estimated to be approximately 600 days. Volatilization from shallow, fast-moving environmental waters may be important (5). B(ghi)P has the potential to bioconcentrate in aquatic systems (5). Limited toxicological data is available specific to B(ghi)P. Some evidence exists that B(ghi)P is genotoxic. The data regarding the carcinogenicity of B(ghi)P is considered inconclusive at this time.

Bioaccumulation:
- Earthworm BAF = 0.24 (4)

Environmental Fate:
- Henry's Law Constant = 1.6×10^{-6} atm m^3/mol (5)
- Vapor pressure = 1.0×10^{-10} mm Hg @ 25°C (5)
- Water solubility = 2.6×10^{-4} mg/l @ 25°C (5)

References:

1. *J. Nat. Cancer Inst.*, 71 (3): 538-44. 1983.

2. Eisler, R. 1987. Polycyclic aromatic hydrocarbon hazards to fish, wildlife, invertebrates: a synoptic review. *U.S. Fish Wildl. Serv. Biol. Rep.* 85(1.11), 81 pp.

3. Agency for Toxic Substance and Disease Control (ATSDR). 1989. *Toxicological Profile for Polycyclic Aromatic Hydrocarbons.*

4. Beyer, W.N. 1990. Evaluating soil contamination. *U.S. Fish Wildl. Serv. Biol. Rep.* 90(2), 25 pp.

5. U.S. Department of Health and Human Services, Bethesda, Md. 1995. Hazardous Substances Data Base (HSDB) On-Line Computer Database.

Table 4L-6

Ecological Toxicity Profile for Benzo(k)fluoranthene

Organism	Dose	Exposure Route	Exposure Period	Effect	Endpoint	Reference
Benzo(k)fluoranthene						
Mouse	0.6 mg/injection	Subcutaneous injection	1 injection/month for 3 months	Sarcoma at site of injection		1
Rat	5 mg/kg	Implant		Tumors at site of implant		2
Mouse		Subcutaneous		Tumors at site of injection	TD_{LO} = 72 mg/kg	3
Rodent	72 mg/kg	Oral	Chronic	Carcinogen		4

Benzo(k)fluoranthene [B(k)F] is a polycyclic aromatic hydrocarbon (PAH) that is a byproduct of incomplete combustion. In the environment, B(k)F adsorbs strongly to soil and sediment (K_{ow}=1.15x10^6, K_{oc}=5.5x10^5). Leaching from soil to groundwater can occur, especially in soils with low organic content (e.g., sand) or high porosity, or from sites htat have been exposed to spills or chemical wastes containing B(k)F. B(k)F is not expected to leach in soil under most other conditions. Volatilization from soil would probably be low due to B(k)F's low vapor pressure and strong adsorption to soil. B(k)F is not expected to volatilize significantly from the aquatic environment. (6) Lethality, systemic and reproductive toxicity data for B(k)F is limited. Experimental data that is available suggests that B(k)F is a weak carcinogen through the oral or dermal route. Studies to date also suggest that B(k)F may be genotoxic and mutagenic.

Bioaccumulation:
- Earthworm BCF = 0.25 (5)

Bioconcentration:
- Fish Log BCF = 4.97 (6)

Environmental Fate:
- Henry's Law Constant = 4.2×10^8 atm m^3/mol (6)
- Vapor pressure = 9.59×10^{-11} mm Hg @ 25°C (6)
- Water solubility = 0.00076 ppm @ 25° (6)

References:

1. *IARC Monographs*, V32 15. 1983.
2. *Polynucl. Aromatic Hydrocarbons Int. Synp.* 7th vol 7, pg 571 1983.
3. *Acta. Unio. Int. Contra. Cancrum.* Vol 19 pg 490. 1963.
4. Eisler, R. 1987. Polycyclic aromatic hydrocarbon hazards to fish, wildlife, invertebrates: a synoptic review. *U.S. Fish Wildl. Serv. Biol. Rep.* 85(1.11), 81 pp.
5. Beyer, W.N. 1990. Evaluating soil contamination. *U.S. Fish Wildl. Serv. Biol. Rep.* 90(2), 25 pp.
6. U.S. Department of Health and Human Services, Bethesda, Md. 1995. Hazardous Substances Data Base (HSDB) On-Line Computer Database.

Table 4L-7

Ecological Toxicity Profile for Benzyl Alcohol

Organism	Dose	Exposure Route	Exposure Period	Effect	Endpoint	Reference
Benzyl Alcohol						
Rat		Oral	One dose	Death	LD_{50} = 1,230 mg/kg	1
Mouse		Oral	One dose	Death	LD_{50} = 1,580 mg/kg	1
Rat		Inhalation	4 hours	Death	LC_{50} = 2,000 ppm	1
Mouse	750 mg/kg/day	Gavage-water	GD 6-13	Decreased birth weight and pup weight gain		2
Rat		Oral	One dose	Death	LD_{50} = 3.1 g/kg	3
Rat		Inhalation	8 hours	Death	LC_{100} = 200-300 ppm	4
Fathead minnow (*Pimephales promelas*)		Medium	48 hours	Death	LC_{50} =770 mg/L	5
Inland silverside (*Menidia beryllina*)		Medium - static	96 hours	Death	LC_{50} =15 mg/L	6
Fathead minnow (juvenile)		Medium - static	1 hour	Death	LC_{50} = 770 mg/L	6

Benzyl alcohol is used in the manufacturing of other benzyl compounds. It is also used in a variety of other common products such as perfumes, food flavorings, nylon dyes, insect repellents, and cosmetics (1).

Bioconcentration:
- BCF = 4.0 (Calculated)

Table 4L-7

(Continued)

Environmental Fate:
- K_{oc} = <5 to 15.6
- K_{ow} = 1.1
- Biological half- life = 1.5 hours in dog
- Half-life in atmosphere = 2 days (estimated)
- Henrys's Law Constant = 3×10^{-7} atm m^3/mol

References:

1. Lewis, R.J. 1992. *Sax's Dangerous Properties of Industrial Materials.* Van Nostrand Reinhold, N.Y.

2. Hardin, B.D., et al. 1987. *Teratog. Carcinog. Mutagen.* 7:29-48.

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5. U.S. Department of Health and Human Services, Bethesda, Md. 1995. Hazardous Substances Data Base (HSDB) on-line computer database.

6. Chemical Information Systems, Inc., Bethesda, Md. 1995. Aquatic Information Retrieval (AQUIRE) on-line computer database.

Table 4L-8

Ecological Toxicity Profile for Beryllium

Organism	Dose	Exposure Route	Exposure Period	Effect	Endpoint	Reference
Beryllium						
Rat		Gavage as BeF_2	1 day	Death	LD_{50} = 18.8 mg/kg/day as BeF_2	1
Rat		Gavage as BeF_2, BeO	1 day	Death	LD_{50} = 18.3 mg/kg/day	1
Mouse		Gavage-water as $BeSO_4$	1 day	Death	LD_{50} = 140 mg/kg/day	1
Mouse		Gavage as BeF_2	1 day	Death	LD_{50} = 19.1 mg/kg/day	1
Meadow vole					NOAEL = 1.308 mg/kg/day	2
Red fox					NOAEL = 0.284 mg/kg/day	2
Daphnia magna				Death	EC_{20} = 3.8 μg/L	2
Fish				Death	EC_{20} = 148 μg/L	2

Beryllium is a naturally occurring element that is released to the environment by the weathering of rocks and soils. It is also naturally emitted to the atmosphere by windblown dusts and volcanic particles. Fuel oil and coal combustion produce significant emissions. Beryllium is not expected to bioconcentrate or biomagnify in the food chain. Limited mobility in soil is expected due to its tendency to adsorb tightly. Leaching through soil to groundwater also is not expected.

Bioconcentration:
- Fish BCF = 19 (1)

References:

1. Agency for Toxic Substances and Disease Registry (ATSDR). 1991. *Toxicological Profile for Beryllium.*

2. Oak Ridge National Laboratory, Environmental Sciences and Health Sciences Research Division, Oak Ridge, Tn. 1994. *Screening Benchmarks for Ecological Risk Assessment.*

Table 4L-9

Ecological Toxicity Profile for BHC (alpha,beta, and delta)

Organism	Dose	Exposure Route	Exposure Period	Effect	Endpoint	Reference
alpha, beta and delta-BHC						
Rat	0.69-1100 mg/kg/day	Oral	Lifespan	Reduced weight gain, increased mortality, and chronic nephritis at 800 mg/kg. Fatty degeneration and centrilobular liver necrosis at higher doses		1
Mouse	70 mg/kg/day	Oral	26 wk	Histologically benign liver tumors		2
Mouse	12-58 mg/kg/-day	Oral	24 wk	Hepatocellular carcinomas, liver nodular hyperplasia		3
Mouse	29 mg/kg/day	Oral	24 wk	Hepatocellular carcinomas and/or nodular hyperplasia		4
Rat		Oral-food	72 wk	Hepatocellular carcinoma	LOAEL=50 mg/kg/day	5
Rat		Oral-food	13 weeks as beta	Decreased weight gain	LOAEL = 12.5 mg/kg/day	6
Mouse		Oral-food	30 days as beta	Decreased cell-mediated immunity	LOAEL = 39 mg/kg/day	6
Rat		Oral-food	13 weeks as beta	Atrophy of uterus, ovary, testes	LOAEL = 12.5 mg/kg/day	6
White footed mouse	beta-BHC				NOAEL = 0.997 mg/kg/day	8
Red fox	beta- BHC				NOAEL = 0.172 mg/kg/day	8

Table 4L-9

(Continued)

Organism	Dose	Exposure Route	Exposure Period	Effect	Endpoint	Reference
alpha, beta and delta-BHC						
Mouse		Oral-food	24 weeks as alpha	Hepatocellular carcinoma	LOAEL = 65 mg/kg/day	6
Rat		Oral-food	7 weeks as tech	Decreased sperm count	LOAEL = 50 mg/kg/day	6
Guppy / medaka	32 μg/L	Medium	3 months	Estrogenic activity		7
Meadow vole	Mixed isomers				NOAEL = 3.17 mg/kg/day	8
Red fox	Mixed isomers				NOAEL = 0.008 mg/kg/day	8
American Robin	Mixed isomers				NOAEL = 0.702 mg/kg/day	8
Great Blue Heron	Mixed isomers				NOAEL = 0.226 mg/kg/day	8
Barn Owl	Mixed isomers				NOAEL = 0.387 mg/kg/day	8
Cooper's Hawk	Mixed isomers				NOAEL = 0.395 mg/kg/day	8
Red-tailed Hawk	Mixed isomers				NOAEL = 0.289 mg/kg/day	8
Alga (*Scendesmus acutus*)	alpha - BHC	Medium - freshwater		Growth inhibition	EC = 500 μg/L	9

Table 4L-9

(Continued)

Organism	Dose	Exposure Route	Exposure Period	Effect	Endpoint	Reference
alpha, beta and delta-BHC						
Water flea (*Daphnia*)	alpha - BHC	Medium		Reduced reproductive efficiency	EC_{50} = 0.1 ppm	9

Technical-grade hexachlorocyclohexane (BHC) has been shown to be well-absorbed in the gastrointestinal tract of animals. The toxicity of the isomers varies. With respect to acute exposure, γ-BHC (lindane) is the most toxic, followed by α-, δ-, and β-BHC; however, on chronic exposure β-BHC is the most toxic followed by α-, γ-, and δ-BHC. With chronic exposures, the increased toxicity of β-BHC is probably due to its longer half-life in the body and its accumulation in the body with time. The excretion of BHC isomers is primarily through the urine. The primary urinary metabolites are chlorophenols and an epoxide. The conversion occurs mainly by hepatic enzymes. In mice, exposure to 64.6 mg technical grade BHC/kg/day for 3 months led to increased testicular weight and degeneration of seminiferous tubules. α-BHC, β-BHC, γ-BHC, and technical-grade BHC have been shown to be liver carcinogens in rats and mice (6). A bioconcentration factor of 1,613 has been calculated for BHC.

Bioconcentration (α-BHC):
- Zebra fish steady-state BCF = 1100 (6)

Bioconcentration (β-BHC):
- Zebra fish steady-state BCF = 1460 (6)

Bioconcentration (δ-BHC):
- Zebra fish steady-state BCF = 1770 (6)

Environmental Fate (α-BHC):
- Log K_{oc} = 3.57
- Log K_{ow} = 3.46
- Henry's Law Constant = 4.8×10^{-6} atm m^3/mol
- Vapor Pressure at 20°C = 0.02 mm Hg

Environmental Fate (β-BHC):
- Log K_{oc} = 3.57
- Log K_{ow} = 4.50
- Henry's Law Constant = 4.5×10^{-7} atm m^3/mol
- Vapor pressure at 20°C = 0.005 mm Hg

Table 4L-9

(Continued)

Environmental Fate (δ-BHC):
- Log K_{oc} = 3.8
- Log K_{ow} = 2.80
- Henry's Law Constant = 2.1×10^{-7} atm m^3/mol
- Vapor pressure at 20°C = 0.02 mm Hg

References:

1. World Health Organization, International Agency for Research on Cancer (IARC), Geneva. 1979. *Monographs of the Evaluation of the Carcinogenic Risk of Chemicals to Man,* V. 20, p. 217.
2. World Health Organization, International Agency for Research on Cancer (IARC), Geneva. 1979. *Monographs of the Evaluation of the Carcinogenic Risk of Chemicals to Man,* V. 20, p. 208.
3. World Health Organization, International Agency for Research on Cancer (IARC), Geneva. 1979. *Monographs of the Evaluation of the Carcinogenic Risk of Chemicals to Man,* V. 20, p. 211.
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5. Ito et al. 1975. As cited in *Toxicological Profile for Alpha-, Beta-, Delta-, and Gamma-Hexachlorocyclohexane.* U.S. Department of Health and Human Services, 1993.
6. Agency for Toxic Substances and Disease Registry (ATSDR). 1994. *Toxicological Profile for Alpha-, Beta-, Gamma-, and Delta-Hexachlorocyclohexane.*
7. Webster, P.W. 1991. Histopathological effects of environmental pollutants β-HCH and methylmercury on reproductive organs in freshwater fish. *Comp. Biochem. Physiol.* V.100C No.½ Pp.237-239.
8. Oak Ridge National Laboratory, Environmental Sciences and Health Sciences Research Division, Oak Ridge, Tn. 1994. *Screening Benchmarks for Ecological Risk Assessment.*
9. U.S. Department of Health and Human Services, Bethesda, Md. 1995. Hazardous Substances Data Base (HSDB) on-line computer database.

Table 4L-10

Ecological Toxicity Profile for BHC (gamma), Lindane

Organism	Dose	Exposure Route	Exposure Period	Effect	Endpoint	Reference
gamma-BHC (Lindane)						
Rat		Gavage	One time	Death	LD_{50} = 88 mg/kg/day	1
Rat		Gavage-oil	One time	Decreased sexual receptivity	LOAEL = 33 mg/kg/day	1
Rabbit		Capsule	5-6 weeks	Suppressed antibody response	LOAEL = 1.5 mg/kg/day	1
Rat		Oral-food	90 days	Disrupted spermatogenesis, testicular atrophy	LOAEL = 75 mg/kg/day	1
Mallard					LD_{50} = >2,000 mg/kg	2
Bobwhite quail		Oral	Acute		LD_{50} = 120-130 mg/kg	3
Mallard		Applied to eggs	One time	Death, birth defects, stunted growth	LC_{50} = 74,000 mg/L	4
Meadow vole					NOAEL = 15.8 mg/kg/day	5
Red fox					NOAEL = 3.44 mg/kg/day	5
American robin					NOAEL = 4.66 mg/kg/day	5
Cooper's hawk					NOAEL = 2.62 mg/kg/day	5
Red-tailed hawk					NOAEL = 1.92 mg/kg/day	5

Table 4L-10

(Continued)

Organism	Dose	Exposure Route	Exposure Period	Effect	Endpoint	Reference
gamma-BHC (Lindane)						
Japanese quail		Oral - diet		Death	LC_{50} = 425 ppm	6
Water flea (*Daphnia pulex*)			48 hours		LC_{48} = 460 μg/L	6
Insect larva (*Chaoborus*)			48 hours		LC_{50} = 0.008 ppm	6
Gastropod (*Lymnea stagnalis*)			48 hours		LC_{50} =7.3 ppm	6
Fathead minnow			96 hours	Death	LC_{50} =87 μg/L	6
Coho salmon			96 hours	Death	LC_{50} =23 μg/L	6

Lindane is used as an insecticide and as a therapeutic scabicide, pediculocide, and ectoparasiticide for humans and animals. As an insecticide, it is used on fruit and vegetable crops, for seed treatment, in forestry, and for animal treatment. EPA no longer permits the use of lindane for purposes involving direct aquatic application. Direct supervision is required for certain applications of lindane on livestock, structures, and domestic pets. Once released in the environment, BHCs can partition to all environmental media. Biodegredation is believed to be the dominant decomposition process for BHCs in soil and water. Lindane can leach from soil to groundwater, sorb to soil particles, or volatilize to the atmosphere. Lindane is bioconcentrated to high levels following uptake from surface waters by a number of aquatic organisms. Lindane and isomers do not undergo biomagnification in terrestrial food chains to a great extent due to metabolism by terrestrial and aquatic organisms. Technical-grade BHC has been shown to be well-absorbed in the gastrointestinal tract of animals. The toxicity of the isomers varies. With respect to acute exposure, γ-BHC (lindane) is the most toxic, followed by α-, δ-, and β-BHC; however, chronic exposure to β-BHC is the most toxic, followed by α-, γ-, and δ-BHC. With chronic exposures, the increased toxicity of β-BHC is probably due to its longer half-life in the body and its accumulation in the body with time. The excretion of BHC isomers is primarily through the urine. The primary urinary metabolites are chlorophenols and an epoxide. The conversion occurs mainly by hepatic enzymes. Lindane has not been reported to cause fetotoxicity in animals. In mice, exposure to 64.6 mg technical-grade BHC/kg/day for three months led to increased testicular weight and degeneration of seminiferous tubules. α-BHC, β-BHC, γ-BHC, and technical-grade-BHC have been shown to be liver carcinogens in rats and mice (1).

Bioaccumulation:

- Earthworm BAF = 4.2 (7)

Table 4L-10

(Continued)

Bioconcentration:
- Brine shrimp BCF (from surface water) = 183
- Rainbow trout fry BCF (from surface water) = 319
- Pink shrimp BCF (from surface water) = 84
- Sheepshead minnow BCF (from surface water) = 490
- Prawn BCF (from surface water) = 1,273

Environmental Fate:
- Log K_{ow} = 3.3
- Henry's Law Constant = 3.2×10^{-6} m^3/mol
- Vapor pressure = 9.4×10^{-6} mm Hg

References:

1. Agency for Toxic Substances and Disease Registry (ATSDR). 1992. *Toxicological Profile for Alpha-, Beta-, Gamma-, and Delta-Hexachlorocyclohexane.*

2. Hudson, R.H., R.K. Tucker, and M.A. Haegele. 1984. *Handbook of Toxicity of Pesticides to Wildlife,* second edition. U.S. Department of the Interior, Fish and Wildlife Service Resource Publication 153. Washington, D.C.

3. Worthing, C.R., and S.B. Walker. 1983. *The Pesticide Manual, A World Compendium,* seventh edition. The British Crop Protection Council.

4. Hoffman, D.J. 1994. Measurements of toxicity and critical stages of development, wildlife toxicity and population modeling. In *Integrated Studies of Agroecosystems,* R.J. Kendal and T.E. Lacher, Jr., eds. Lewis P.

5. Oak Ridge National Laboratory, Environmental Sciences and Health Sciences Research Division, Oak Ridge, Tn. 1994. *Screening Benchmarks for Ecological Risk Assessment.*

6. U.S. Department of Health and Human Services, Bethesda, Md. 1995. Hazardous Substance Data Base (HSDB) on-line computer database.

7. Beyer, W.N. 1990. Evaluating soil contamination. *U.S. Fish Wildl. Serv. Biol. Rep.,* 90(2), 25pp.

Table 4L-11

Ecological Toxicity Profile for Chloroethane

Organism	Dose	Exposure Route	Exposure Period	Effect	Endpoint	Reference
Chloroethane						
Rat		Inhalation	102 weeks, 5 day/wk, 6 hours/day	Reproductive	NOAEL = 15,000 ppm	1
Mouse		Inhalation	100 weeks, 5 day/wk, 6 hours/day	Reproductive	NOAEL = 15,000 ppm	1
Mouse		Inhalation		Cancer effect level (uterus, liver, lungs)	LOAEL = 15,000	1

The high vapor pressure and volatility from water suggest that this compound would evaporate rapidly from soil sufaces and that volatilization would be a mojor removal process. The relatively low K_{oc} values for chloroethane indicate that this compound is highly mobile in soil and may undergo significant leaching (1).

Bioconcentration:
- BCF = 7.5 based on K_{ow} and water solubility (1)

Environmental Fate:
- Log K_{oc} = 1.52
- Log K_{ow} = 1.43
- Henry's Law Constant at 24.8°C = 1.11×10^{-2} atm-m^3/moL
- Water solubility = 5,678 mg/L at 20°C
- Vapor Pressure at 20°C = 1,008 mmHg

References:

1. Agency for Toxic Substances and Disease Registry (ATSDR). 1989. *Toxicologial Profile for Chloroethane.*

Table 4L-12

Ecological Toxicity Profile for Chloroform

Organism	Dose	Exposure Route	Exposure Period	Effect	Endpoint	Reference
Chloroform						
Rat (F)		Inhalation	4 hours	Death	LC_{50} = 9,770 ppm	1
Mouse (F)		Inhalation	9 hours	Death (50% mortality)	LOAEL = 4,500 ppm	1
Rat (M)		Inhalation	6 months 5 days/week 7 hours/day	Increased Mortality (60%)	LOAEL = 85 ppm	1
Rat		Inhalation	10 days GD 6-15, 7 hr/day	73% decreased conception rate	LOAEL = 300 ppm	1
Mouse		Inhalation	8 days GD 8-15, 7 hr/day	30-48% decreased ability to maintain pregnancy	LOAEL = 100 ppm	1
Rat (M)		Oral (Gavage)	1 time	Death	LD_{50} = 908 mg/kg/day	1
Mouse		Oral (Gavage)	1 time	Death	LD_{50} = 1,100 mg/kg/day	1
Rabbit		Oral (Gavage)	13 days GD 6-18, 1 time	Abortion	LOAEL = 63 mg/kg/day	1
Rat		Oral (Gavage)	78 weeks 5 days/week 1 time/day	Decreased survival	LOAEL = 90 mg/kg/day	1
Water flea *(Daphnia magna)*		Static test	48 hours		LC_{50} = 28,900 μg/L	2

Table 4L-12

(Continued)

Organism	Dose	Exposure Route	Exposure Period	Effect	Endpoint	Reference
Chloroform						
Rainbow trout (*Salmo gairdneri*)		Static test	96 hours		LC_{50} = 43,800 μg/L	2
Bluegill (*Lepomis macrochirus*)		Static test	96 hours		LC_{50} = 115,000 μg/L	2
Pink shrimp (*Penaeus duorarum*)		Static test	96 hours		LC_{50} = 81,500 μg/L	2
Rainbow trout (embryo)	10,600 μg/L		23 days	40% teratogenesis		2
Pink shrimp (*Penaeus duorarum*)		Medium - static	96 hours	Death	LC_{50} = 81.5 mg/L	3
Bluegill (*Lepomis macrochirus*)		Medium - static	96 hours	Death	LC_{50} = 43.8 mg/L	3
Water flea (*Daphnia magna*)		Medium - static	48 hours		LC_{50} = 28.9 mg/L	3
Rainbow trout (*Salmo gairdneri*)		Medium - flow-through	27 Days	40% teratogenesis	LC_{50} = 2.03 mg/L	3

Table 4L-12

(Continued)

Organism	Dose	Exposure Route	Exposure Period	Effect	Endpoint	Reference
Chloroform						
Meadow vole					NOAEL = 29.7 mg/kg/day	4
Red fox					NOAEL = 6.4 mg/kg/day	4
Freshwater organism			Chronic	Proposed AWQC - protective of aquatic life	LOEL = 1240 μg/L	5

Significant effects are not expected in terrestrial or aquatic ecosystems rapidly diluted and degraded to low concentrations in the troposphere. Acute efects on wildlife can occur in the vicinity of major chloroform spills, but signs of chronic effects from long term exposure to low ambient levels are unlikely.

Environmental Fate:
- K_{oc} = 45
- Log K_{ow} = 1.92
- Henry's Law Constant at 20°C = 3.0 x 10^{-3} atm/m^3/mol
- Vapor Pressure at 20°C = 159 mmHg

Bioconcentration:
- Bluegill sunfish BCF = 6 and 8
- Green alga BCF = 690

References:

1. Agency for Toxic Substances and Disease Registry (ATSDR). 1991. *Toxicological Profile for Chloroform.*

2. U.S. Environmental Protection Agency (EPA). 1984. *EPA Health Assessment Document for Chloroform.* EPA-600/8-84-004 A.

3. U.S. Department of Health and Human Services, Bethesda, Md. 1994. Hazardous Substances Data Base (HSDB) on-line computer database.

4. Oak Ridge Natiuonal Labs, Environmental Sciences and Health Sciences Research Division, Oak Ridge, Tn. 1994. *Screening Benchmarks for Ecological Risk Assessment.*

5. U.S. Environmental Protection Agency (EPA), Office of Science and Technology, Health and Ecological Criteria Divison, Washington, D.C. 1991. *Water Quality Criteria Summary.*

Table 4L-13

Ecological Toxicity Profile for Chloromethane

Organism	Dose	Exposure Route	Exposure Period	Effect	Endpoint	Reference
Chloromethane						
Mouse		Inhalation	6 hours	Death	LC_{50} = 2,200 ppm	1
Rat		Inhalation	2-3 days 24 hours/day	Kidney failure	LOAEL = 1,000 ppm	1
Mouse		Inhalation	12 months 5 days/week 6 hours/day	Increased mortality	LOAEL = 1,000 ppm	1
Mouse		Inhalation	12 days 6 hours/day GD 6-17	Heart defect in fetuses	LOAEL = 500 ppm	1
Rat		Inhalation	18 months 5 days/week 6 hours/day	Testicular atrophy	LOAEL = 1,000 ppm	1
Bluegill (*Lepomis macrochirus*)		Medium - static	96 hours	Death	LC_{50} = 550 mg/L	2
Inland silverside (*Menidia beryllina*)		Medium - static	96 hours	Death	LC_{50} =27 mg/L	2

Bioconcentration:
- BCF = 2.88

Environmental Fate:
- Log K_{oc} = 0.7
- Log K_{ow} = 0.91
- Henry's Law Constant at 25°C = 8.82×10^{-3} atm m^3/mol
- Vapor Pressure at 25°C = 4,309.7 mm Hg

References:
1. Agency for Toxic Substances and Disease Registry (ATSDR). 1990. *Toxicologic[illegible]file for Chloromethane.*
2. Chemical Information Systems, Inc., Bethesda, Md. 1995. Aquatic Information [illegible]al (AQUIRE) on-line computer database.

Table 4L-14

Ecological Toxicity Profile for Chrysene

Organism	Dose	Exposure Route	Exposure Period	Effect	Endpoint	Reference
Chrysene						
Rodent	99 mg/kg	Oral	Chronic	Carcinogenicity		1
Rat	100 mg/kg/day	Dermal	17 months	Benign and malignant skin tumors		2
Rat	100 mg/kg/day	Intra-gastrically	4 days	Induction of hepatic aldehyde dehydrogenase		2
Rat	50 mg/kg/day	Intra-gastrically		Induction of hepatic carboxylesterase		2
Mallard	0.27 μg/kg whole egg	PAH mixture applied to the external surface of the egg		Reduction in embryonic growth, increased number of abnormal survivors		1
Carp (*Cyprinus carpio*)		Oral-diet	43 hours	Death	EC = 190-218 mg/kg	3
Chinook salmon (*Oncorhynchus tshawtscha*)		Medium - static	24 hours	Death	EC = 10000 μg/L	3
Water flea (*Daphnia magna*)		Medium - renewal	24 hours	Death	LC_{50} = 0.7 μg/L	3

Table 4L-14

(Continued)

Organism	Dose	Exposure Route	Exposure Period	Effect	Endpoint	Reference
Chrysene						
Northern squawfish (*Ptychocheilus oregonesis)*		Medium-static	24 hours	Death	EC = 10000 µg/L	3

Chrysene is one of the polycyclic aromatic hydrocarbons (PAHs). Chrysene is present in the environment due to natural and man-made sources. Combustion is the primary source of chrysene in the environment. Chrysene is persistent in the environment, partitioning to soil and sediment (K_{ow} = 4.1×10^5, K_{oc} = 2×10^5, and Log K_{ow} = 5.61). The potential exists for bioaccumulation. Biodegradation ocurs in soils and sediment at a slow rate ($t_{½}$ = 1,000 days). Limited toxicological data specific to chrysene is available. At relatively high concentrations, ingestion of chrysene is fatal to rats and mice. Experiental evidence suggests that chrysene is a weak carcinogen. Moderate evidence supports the conclusion that chrysene is a skin carcinogen in experimental animals. Chrysene has been shown to be genotoxic in some test systems. The evidence is considered weakly positive. Based on the estimated BCF values, chrysene would be expected to bioconcentrate; however, PAHs are not likely to appreciably bioconcentrate in organisms which have mucrosomal oxidase, such as fish, as this enzyme enables the organism to metabolize them. Some marine organisms have no detectable aryl hydrocarbons hydroxylase enzyme systems, namely phytoplankton, certain zooplankton, mussels *(Mytilus edulis)*, scallops *(Placopecten sp.)*, and snails *(Litternia littorea)*. Those organisms which lack a metabolic detoxification system tend to accumulate PAHs. Volatilization from water should not be an important process. (5)

Bioaccumulation:
- Earthworm BAF = 0.07 (4)

Bioconcentration:
- BCF = 10,816
- Water flea *(Daphnia magna)* BCF (after 70 hours—rapidly eliminated) ≈ 2,000 (5)

Environmental Fate:
- K_{ow} = 5.61-5.91
- Henry's Law Constant = 9.4×10^{-8} atm m^3/mol

References:

1. Eisler, R. 1987. Polycyclic aromatic hydrocarbon hazards to fish, wildlife, and invertebrates: a synoptic review. *U.S. Fish Wildl. Serv. Biol. Rep.* 85(1.11), 81 pp.
2. Agency for Toxic Substance and Disease Registry (ATSDR). 1989. *Toxicological Profile for Polycyclic Aromatic Hydrocarbons.*
3. Chemical Information Systems, Inc., Baltimore, Md. 1995. Aquatic Information Retrieval (AQUIRE) on-line computer database.
4. Beyer, W.N. 1990. Evaluation of soil contamination. *U.S. Fish Wildl. Serv. Biol. Rep.* 90(2).
5. U.S. Department of Health and Human Services, Bethesda, Md. 1995. Hazardous Substances Data Base (HSDB) on-line computer database.

Table 4L-15

Ecological Toxicity Profile for Dibenz(a,h)anthracene

Organism	Dose	Exposure Route	Exposure Period	Effect	Endpoint	Reference
Dibenz(a,h)anthracene						
Mouse		Oral	Acute	Death	TD_{LO} = 4,160 mg/kg	1
Rat	200 mg/kg	Oral	Acute	Oncogenic trans-formation		2
Rat		Subcutaneous	Acute	Tumorigenic	TD_{LO} = 2.4 mg/kg	3
Mouse		Subcutaneous	Acute	Tumors at site of injection	TD_{LO} = 0.445 mg/kg	4
Guinea pig		Intervaneous	Acute	Tumors; lung and thorax	TD_{LO} = 30 mg/kg	5
Rat	3 mg/Kg	Interperitoneal	Acute	Reduced growth rate		6
Rat	5 mg/day	Subcutaneous	GD 1 to birth	Fetal resorption and death		7
Rat	0.76 - 0.85 mg/day	Oral	Chronic	Pulmonary adenomas		8
Mouse		Subcutaneous	Acute (single injection)	Local sarcomas	LOAEL = 0.0019 mg	7
Mouse	0.012 mg/kg/day	Dermal application	Lifetime	Papilloma carcinoma		7
Rodent	0.006 mg/kg	Oral	Chronic	Carcinogenic		9
Frog		Injection into kidney		Renal adenosarcomas	TD_{LO} = 12 mg/kg	10
Pigeon		Intramuscular Injection		Fibrosarcomas at site of injection (12 %)	TD_{LO} = 6 mg/kg	11

Table 4L-15

(Continued)

Organism	Dose	Exposure Route	Exposure Period	Effect	Endpoint	Reference
Dibenz(a,h)anthracene						
Fowl	0.4 % in lard	Intramuscular injection		Sarcomas (48 %)		12

Dibenz(a,h)anthracene [D(ah)A] is a polycyclic aromatic hydrocarbon (PAH) that is a byproduct of incomplete combustion. In the environment, D(ah)A adsorbs strongly to soil and sediment ($K_{ow} = 6.9\times10^6$, $K_{oc} = 3.3\times10^6$). It is considered immobile in soil and leaching to groundwater is not expected. The major fate of soil- and sediment-bound D(ah)A is biodegradation. The $T_{½}$ in soil is estimated to be approximately 18-21 days. Limited lethality and systemic or reproductive toxicity data are available for D(ah)A. D(ah)A has been shown to be carcinogenic in experimental animals (lung, thorax, and skin). There is sufficient evidence that D(ah)A is active in short-term genotoxicity tests. D(ah)A is expected to bioconcentrate in aquatic organisms; however, it may bioconcentrate in organisms which have microsomal oxidase, such as fish, as this enzyme enables the rapid metabolization of certain PAHs. Those organisms which lack a metabolic detoxification enzyme system, namely phytoplankton, certain zooplankton, mussels *(Mytilus edulis)*, scallops *(Placopecten sp.)*, and snails *(Litternia littorea)*, tend to accumulate PAHs. Volatilization should not be an important process. (13)

Bioconcentration:
- BCF = 51,000 (13)

Environmental Fate:
- Henry's Law Constant < 3×10^7 atm m^3/mol
- Vapor Pressure = 1×10^{-10} mm Hg
- Water Solubility = 0.0005 ppm

References:

1. Lewis, R.J. *Sax's Dangerous Properties of Industrial Metals*, 8th edition.

2. Cancer Res, Vol 38 pg 2621 (1978).

3 Carcinog. Aromatic Hydrocarbons, pg 1975 (1975).

4. Carcinogenesis, Vol 11, pg 1721 (1990).

5. J. Nat. Cancer Inst, vol 13, pg 705 (1952).

6. Int. Agency for Research on Cancer, V32, 301 (1983).

Table 4L-15

(Continued)

7. Agency for Toxic Substances and Disease Registry (ATSDR). 1989. *Toxicological Profile for Polycyclic Aromatic Hydrocarbons.*

8. Int. Agency for Research on Cancer, V3 182 (1973).

9. Eisler, R. 1987. Polycyclic aromatic hydrocarbon hazards to fish, wildlife, invertebrates: a synoptic review. *U.S. Fish Wildl. Serv. Biol. Rep.* 85(1.11), 81 pp.

10. Cancer Res, vol 24, (1969).

11. J Natl Cancer Inst, vol 32 pg 905, (1964).

12. IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man V3 186 (1973).

13. U.S. Department of Health and Human Services, Bethesda, Md. 1995. Hazardous Substances Data Base (HSDB) on-line computer database.

Table 4L-16

Ecological Toxicity Profile for Dibromomethane

Bioconcentration of dibromomethane in aquatic organisms should not be significant. Dibromomethane will not adsorb significantly to soil or sediment (2).

Environmental Fate:
- K_{oc} = 25 (2)
- Log K_{ow} = 1.23 (1)
- Henry's Law Constant = 8.88×10^{-4} atm m^3/mol (2)
- Water solubility = 11.70 g/L @ 15°C (2)

Bioconcentration Factor (BCF):
- Fish, BCF = 5 (1)

References:

1. Sims and Hansen, Soil, Transport, and Fate Database, Version 2.0, Utah State University, April 1991.

2. U.S. Department of Health and Human Services, Bethesda, Md. 1995. Hazardous Substances Data Base (HSDB) on-line computer database.

Table 4L-17

Ecological Toxicity Profile for 1,2-Dichloroethane

Organism	Dose	Exposure Route	Exposure Period	Effect	Endpoint	Reference
1,2-Dichloroethane						
Guinea pig		Inhalation	25 weeks 5 days/week 7 hours/day	Death (5/14)	LOAEL = 200 ppm	1
Rabbit		Inhalation	20 weeks 5 days/week 7 hours/day	Death (5/5)	LOAEL = 400 ppm	1
Dog		Inhalation	9 weeks 5 days/week 7 hours/day	Death (2/6)	LOAEL = 1000 ppm	1
Monkey		Inhalation	8 weeks 5 days/week 7 hours/day	Death (2/2)	LOAEL = 1000 ppm	1
Rat	4.7 ppm	Inhalation	4 months prior to mating, continuing through pregnancy	Embryo mortality		1
Rat	14 ppm	Inhalation	6 months	Decreased fertility		1
Rat	50 ppm	Inhalation	Intermittent 2 years	Increased testicular lesions		1
Rat		Water	13 weeks	Decreased body weight gain	LOAEL = 259 mg/kg/day	1
Rat		Oral-gavage	78 weeks	Death (42/50)	LOAEL = 92 mg/kg/day	1
Rat		Oral-gavage	78 weeks	Cancer Effect Level-liver, spleen, adrenal gland, pancreas	LOAEL = 47 mg/kg/day	1

Table 4L-17

(Continued)

Organism	Dose	Exposure Route	Exposure Period	Effect	Endpoint	Reference
1,2-Dichloroethane						
Freshwater aquatic organism			Chronic	Proposed AWQC - protection of aquatic life	LOEL = 20,000 μg/L	3
Meadow Vole					NOAEL = 46.3 mg/kg/day	4
Red Fox					NOAEL = 10.06 mg/kg/day	4
American Robin					NOAEL = 46.81 mg/kg/day	4
Cooper's Hawk					NOAEL = 26.4 mg/kg/day	4
Red-tailed Hawk					NOAEL = 19.3 mg/kg/day	4

1,2-Dichloroethane does not occur naturally. It is produced commercially and used as a chemical intermediate in the production of several other chemicals as well as a lead scavenger additive to unleaded gasoline. Previously it was used in varnish and finish removers, soaps and scouring compounds, solvents, degreasers, paints, adhesives, and fumigants. Releases to surface water and soils are likely to partition rapidly to the atmosphere by volitilization. Little absorption to soil is expected. An experimental BCF of 2 indicates that the compound will not bioconcentrate in aquatic organisms or bioaccumulate in the food chain (1).

Bioconcentration :
- BCF (Bluegill) = 2 (2)

Environmental Fate:
- Log K_{ow} = 1.45 - 1.48
- Vapor Pressure at 20°C = 64 mmHg

References:

1. Agency for Toxic Substances and Disease Registry (ATSDR). 1994. *Toxicological Profile for 1,2-Dichloroethane.*
2. U.S. Environmental Protection Agency (EPA). 1984. *Health Effects Assessement for 1,2-Dichloroethane.*
3. U.S. Environmental Protection Agency (EPA), Office of Science and Technology, Health and Ecological Criteria Division, Washington, D.C. 1991. *Water Quality Criteria Summary.*
4. Oak Ridge National Labs, Oak Ridge, Tn., Environmental Sciences and Health Sciences Research Division. 1994. *Screening Benchmarks for Ecological Risk Assessment.*

Table 4L-18

Ecological Toxicity Profile for 1,2-Dichloroethene (cis,-trans-)

Organism	Dose	Exposure Route	Exposure Period	Effect	Endpoint	Reference
1,2-Dichloroethene (cis-, trans-)						
Mouse		Inhalation as trans	1 day, 6hrs/day	Death	LC_{50} = 21723 ppm	1
Rat		Oral - gavage as trans	1 day	Death	LC_{50} =1275 mg/kg/day	1
Mouse		Oral - gavage as trans	1 day	Death	LC_{50} = 2122 mg/kg/day	1
Freshwater Aquatic Organsisms		Medium	Acute	Proposed water quality criteria-protective of aquiatic life	LOEL = 11,600 μg/L	2
Bluegill *(Lepomis macrochirus*)		Medium-static	96 hours	Death	LC_{50} = 140 mg/L	3
Meadow Vole					NOAEL = 39.8 mg/kg/day	4
Red Fox					NOAEL = 8.65 mg/kg/day	4

cis- and trans-1,2-Dichloroethene are man-made compounds. Sources of 1,2-dichloroethene environmental exposure include: process and fugitive emissions from its production and use as a chemical intermediate; evaporation from wastewater streams, landfills, solvents, emissions from combustion or heating of vinyl copolymers. Most of the 1,2-dichloroethene released in the environment will eventually enter the atmosphere or groundwater, where it is broken down further. Bioconcentration factors (BCFs) in fish ranging between 5 and 23 have been estimated for the 1,2-dichloroethene isomers using linear regression. These BCFs suggest that these compounds do not bioconcentrate significantly in aquatic organisms and that there is little potential for biomagnification within the food chain.

Bioconcentration (cis-1,2-dichloroethene):

- BCF = 0.8 (2)

Table 4L-18

(Continued)

Environmental Fate (cis-1,2-dichloroethene):
- Log K_{oc} = 1.51-1.69
- Log K_{ow} = 1.86
- Henry's law constant = 4.08×10^{-3} atm-m^3/mole at 24.8°C
- Vapor pressure = 215 mmHg

Environmental Fate (trans-1,2-dichloroethene):
- Log K_{oc} = 1.51-1.69
- Log K_{ow} = 2.09
- Henry's law constant = 9.38×10^{-3} atm-m^3/mole at 24.8°C
- Vapor pressure = 336 mmHg

References:

1. Agency for Toxic Substance and Disease Registry (ATSDR). 1989. Toxicological Profile for 1,2-Dichloroethene.

2. Oak Ridge National Labs, Oak Ridge, Tn., Environmental Sciences and Health Sciences Division. 1994. *Screening Benchmarks for Ecological Risk Assessmsnt.*

3. Chemical Information Systems, Inc., Baltimore, Md. 1994. Aquatic Information Retrieval (AQUIRE) On-Line Computer Database.

4. U.S. Department of Health and Human Services, Bethesda, Md. 1994. Hazardous Substances Data Base (HSDB) On-Line Computer Database.

Table 4L-19

Ecological Toxicity Profile for Endosulfan, Endosulfan I, II, and Endosulfan Sulfate

Organism	Dose	Exposure Route	Exposure Period	Effect	Endpoint	Reference
Endosulfan, Endosulfan I, II, and Endosulfan Sulfate						
Rat		Gavage-oil	One time	Death	LD_{50} = 121 mg/kg/day	1
Rat		Gavage-oil	7 days	Increased liver weight	LOAEL = 2.5 mg/kg/day	1
Rat		Gavage-oil	7-15 days	Decreased testosterone levels	LOAEL = 5 mg/kg/day	1
Rat		Oral-food	84 days	Decreased litter weight	LOAEL = 3.75 mg/kg/day	1
Mouse		Oral-food	78 weeks	Testicular atrophy (males), ovarian cysts (females)	LOAEL (males) = 0.46 mg/kg/day, (females) = 0.26 mg/kg/day	1
Rainbow trout		Medium	96 hour static	Death	LC_{50} = 1.6 µg/L	2
Freshwater aquatic organism		All isomers	Chronic	Protection of aquatic life	AWQC = 0.0056 ug/L	8
Freshwater fish (*Channa puncutata*)		Medium	96 hour		LC_{50} = 0.16 ppb (Endosulfan I) LC_{50} = 4.8 ppb (tech) LC_{50} = 6.6 ppb (Endosulfan II)	
Carp (*Cirrhinus mrigrala*)			96 hour		LC_{50} = 0.6 ppb (Endosulfan I) LC_{50} = 1.3 ppb (tech) LC_{50} = 8.8 ppb (Endosulfan II)	
Saltwater aquatic organism		All isomers	Chronic	Protection of aquatic life	AWQC = 0.0087 ug/L	8

Table 4L-19

(Continued)

Organism	Dose	Exposure Route	Exposure Period	Effect	Endpoint	Reference
Endosulfan, Endosulfan I, II, and Endosulfan Sulfate						
Japanese quail		Egg immersed 30 sec.	Observed 15-17 days	Embryonic mortality	0.1 g/L	5
Mallard		Oral		Acute	LD_{50} = 205-245 mg/kg	4
Ring-necked pheasant		Oral		Acute	LD_{50} = 620-1,000 mg/kg	4
Meadow vole		Endosulfan			NOAEL = 0.29 mg/kg/day	9
Red fox		Endosulfan			NOAEL = 0.065 mg/kg/day	9
American Robin		Endosulfan			NOAEL = 17.22 mg/kg/day	9
Great Blue Heron		Endosulfan			NOAEL = 5.54 mg/kg/day	9
Cooper's hawk		Endosulfan			NOAEL = 9.69 mg/kg/day	9
Red-tailed hawk		Endosulfan			NOAEL = 7.10 mg/kg/day	9

Endosulfan is registered in the United States and is widely used as a contact and stomach insecticide on over 60 food and non-food crops. Pure endosulfan may be found as two different conformations: α, or I, and β, or II. Technical grade endosulfan consists mainly of these isomers as well as a few impuritites and degradation products. One of these products, endosulfan sulfate, which has similar chemical properities to the pure substance, results from endosulfan's photolysis, biotransformation, or oxidation. Both endosulfan isomers can be readily metabolized to endosulfan sulfate by a variety of organisms. Endosulfan has been released into the environment mainly as a result of its use as an insecticide. There are no known natural sources of the compound. (3) Endosulfan does not bioaccumulate to high levels in terrestrial or aquatic systems. In aquatic systems, residue levels in fish generally peak within 7 days to 2 weeks after continuous exposure to endosulfan. In terrestrial systems, endosulfan generally is not translocated in plant tissues (1). Endosulfan does not appear to biomagnify in the food chain. No toxicity information was found for the environmental fate specific to the isomers of endosulfan sulfate.

Bioconcentration (Endosulfan):
- BCF ≤ 3,000
- Mussel BCF = 600, 22.5
- Striped mullet BCF = 2,755 (1)

Bioconcentration (Endosulfan I):
Mosquitofish BCF = 59

Table 4L-19

(Continued)

Environmental Fate (Endosulfan):
- Log K_{oc} = 3.5
- Log K_{ow} = 3.55, 3.62
- Henry's Law Constant = 1.0×10^{-5} atm m^3/mol @ 25°C
- Vapor Pressure = 1×10^{-5} mm Hg @ 25°C
- Water Solubility = 0.16-0.15 ppm @ 22°C

Environmental Fate (Endosulfan I):
- Log K_{ow} = 3.83, 3.55
- Henry's Law Constant = 1.0×10^{-5} atm m^3/mol @ 25°C
- Vapor Pressure = 1×10^{-5} mm Hg @ 25°C
- Water Solubility = 0.32 ppm @ 22°C

Environmental Fate (Endosulfan II):
- Log K_{ow} = 3.52
- Henry's Law Constant = 1.91×10^{-5} atm m^3/mol @ 25°C
- Vapor Pressure = 1×10^{-5} mm Hg @ 25°C
- Water Solubility = 0.33 ppm @ 22°C

Environmental Fate (Endosulfan sulfate):
- Log K_{ow} = 3.66
- Henry's Law Constant = 2.6×10^{-5} atm m^3/mol @ 25°C
- Vapor Pressure = 1×10^{-5} mm Hg @ 25°C
- Water Solubility = 0.22 ppm @ 22°C

References:

1. Agency for Toxic Substances and Disease Registry (ATSDR). 1990. *Toxicological Profile for Endosulfan.*
2. Sunderam, R.I.M., D.M.H. Cheng, and G.B. Thompson. 1992. Toxicity of endosulfan to native and introduced fish in australia. *Env. Tox. Chem.* 11:1469-1476.
3. Chandler, G.T. and G.I. Scott. 1991. Effects of sediment-bound endosulfan on sirvival, reproduction, and larval settlement of meiobenthic polychaetes and copepods. *Env. Tox. Chem.* 10:375-382.
4. Worthing, C.R. and S.B. Walker. 1983. *The Pesticide Manual, A World Compendium,* seventh edition. British Crop Protection Council.
5. Hoffman, D.J. 1990. Embryotoxicity and teratogenicity of environmental contaminants to bird eggs. *Reviews of Envir. Contam. and Toxicol.* 115:40-88.
6. Priyamuada Devi, A., D.M. Rato, K.S. Tilak, and A.S. Murty. 1981. Relative toxicity to the technical grade material, isomers and formulations of endosulfan to the fish *Channa punctuata. bull. Envir. Contam. Toxicol.* (27):239-243.
7. Ananda Swarup, P., D. Mohanarao, and A.S. Murty. 1981. Toxicity of endosulfan to the freshwater fish *Cirrhinus mrigala. Bull. Envir. Contam. Toxicol.* (27):850-855.
8. U.S. Environmental Protection Agency (EPA). 1991. Water quality criteria summary. *Federal Register,* notice 45FR79334. Office of Science and Technology, Health and Ecological Criteria Division, Washington, D.C.
9. Oak Ridge National Laboratory, Environmental Sciences and Health Sciences Research Division, Oak Ridge, Tn. 1994. *Screening Benchmarks for Ecological Risk Assessment.*

Table 4L-20

Ecological Toxicity Profile for Ethylbenzene

Organism	Dose	Exposure Route	Exposure Period	Effect	Endpoint	Reference
Ethylbenzene						
Rat	408 - 680 mg/kg/day	Oral	182 days	Increased liver and kidney weight		1
Rat		Oral	Single dose	Death	LD_{50} = 3,500 mg/kg	3
Rat		Inhalation	7 hrs	Fetotoxicity	TC_{Lo} = 985 ppm	4
Rat		Inhalation	7 hrs	Decreased fertility	TC_{Lo} = 97 ppm	4
Rabbit		Inhalation	7 hrs	Decreased fertility	TC_{Lo} = 99 ppm	4
Rabbit		Inhalation	24 hrs	Fetotoxicity	TC_{Lo} = 500 mg/m^3	4
Fish		Oral	96 hr	Death	LC_{50} = 42.3 - 48.5 mg/L	2
Shrimp (*Mysidopsis bahia*)		Medium	96 hr	Death	*LC_{50}* =275 mg/L	7
Guppy (*Poecilla reticulata*)		Medium	96 hr	Death	*LC_{50} =97.1 mg/L*	8
Fathead minnow (*Pimephales promelas*)		Medium - static	96 hr	Death	*LC_{50} =42.3 mg/L*	9
Coho salmon (*Oncorhynchus kisutch*)		Medium - static	24 hr	Death	*LC_{100} =50.0 mg/L*	9

Table 4L-20

(Continued)

Ethylbenzene is an aromatic hydrocarbon present in crude petroleum. The physicochemical properties of ethylbenzene reveal a strong tendency for it to partition to the atmosphere. The log K_{ow} of ethylbenzene indicates that there is a good possibility of its adsorption to soil. Sorption and retardation by soil organic carbon will occur to a small extent, but sorption is not significant enough to prevent migration in most soils. Ethylbenzene does not significantly bioaccumulate. Biodegradation of this compound occurs by aerobic soil microbes. In surface water, transformation may occur through oxidation and biodegradation (5).

Bioconcentration:
- Clam BCF = 4.7 (6)
- Clam log BCF = 0.67
- Fish BCF = 37.5 (based on log K_{ow})
- Fish log BCF = 2.16
- Goldfish log BCF = 1.9

Environmental fate:
- Log K_{ow} = 3.15
- Henry's Law Constant = 8.44 x 10-3 atm m^3/mol
- Vapor Pressure = 7 mm Hg @ 20°C

References:

1. *Patty's Industrial Hygiene and Toxicology*: volume 2A, 2B, 2C.

2. Pickering OH, Henderson C.; J Water Pollut Control Fed 38; 1419 (1966).

3. AMA Arch Ind Health, vol 14, pg 387,1956.

4. Natl Tech Inf Serv[PB83-20874]

5. Agency for Toxic Substance and Disease Registry (ATSDR). 1989. *Toxicological Profile for Ethylbenzene.*

6. U.S. Environmental Protection Agency (EPA). 1984. *Health Effects Assessment for Ethylbenzene.* EPA/5041/1-86/008.

7. U.S. Department of Health and Human Services, Bethesda, Md. 1995. Hazardous Substance Data Base (HSDB) on-line computer database.

8. Chemical Information Systems, Inc., Baltimore, Md. 1995. Aquatic Information Retrieval (AQUIRE) on-line computer database.

Table 4L-21

Ecological Toxicity Profile for Fluoranthene

Organism	Dose	Exposure Route	Exposure Period	Effect	Endpoint	Reference
Fluoranthene						
Rat		Oral		Death	LD_{50} = 2,000 mg/kg	1
Mouse		Interveneous injection		Death	LD_{50} = 2 gm/kg	1
Mouse	3.5 mg/mouse			Increase in lung tumor incidence		2
Rabbit		Dermal	Not specified	Death	LD_{50} = 3.18 gm/kg/24 hr	3
Bluegill		Medium	96 hour	Death	LC_{50} = 3,980 ug/L	4
Sheepshead minnow		Medium	96 hour	Death	LC_{50} = 560 mg/L	4
Mysid shrimp		Medium - static	96 hour	Death	LC_{50} = 40 ug/L	5
Polychaete		Medium - static	96 hour	Death	LC_{50} = 500 mg/L	5
Alga (*Skeletonima costatum*)		Medium - static	96 hour	reduced cell numbers	EC_{50} = 45 mg/L	5

Fluoranthrene is a polycyclic aromatic hydrocarbon (PAH) that is a byproduct of incomplete combustion. In the environment, fluoranthrene adsorbs strongly to soil and would be expected to remain bound in the upper layers of soil ($K_{ow} = 7.9 \times 10^4$, $K_{oc} = 3.8 \times 10^3$). Fluoranthene degrades slowly in soil ($t_{1/2}$=5 months - 2 years). The bioconcentration factor as determined in rainbow trout indicates the potential for bioconcentration in aquatic species (Log BCF = 2.58). Limited toxicity data is available for fluoranthene.

Bioaccumulation:
- Earthworm BAF = 0.08 (6)

Table 4L-21

(Continued)

Bioconcentration:

- Rainbow trout BCF (liver) = 379

References:

1. Lewis, R.J. *Sax's Dangerous Properties of Industrial Materials,* eighth edition.

2. Busby WF. Jr. et al; Carcinogenesis 5(10):1311-6 (1984).

3. Smyth HF. et al; Am In Hyg Assoc J 23;95 (1962).

4. U.S. Environmental Protection Agency (EPA). 1980. *Ambient Water Quality Criteria Document: Fluoranthene.*

5. U.S. Department of Health and Human Services, Bethesda, Md. 1995. Hazardous Substances Data Base (HSDB) on-line computer database.

6. Beyer, W.N. 1990. Evaluating soil contamination. *U.S. Fish Wildl. Serv. Biol. Rep.* 90(2), 25 pp.

Table 4L-22

Ecological Toxicity Profile for Heptachlor and Heptachlor Epoxide

Organism	Dose	Exposure Route	Exposure Period	Effect	Endpoint	Reference
Heptachlor and Heptachlor Epoxide						
Rat		Oral-food	60 days	16% Embryo survival in F1 generation	LOAEL = 0.25 mg/kg/day	1
Rat		Oral-food	60 days	Fertility decreased by 22% in F1 generation; 100% infertility in F2 generation	LOAEL = 0.25 mg/kg/day	1
Mouse		Oral-food	10 weeks, 4 times/day	100% Infertility	LOAEL = 6.5 mg/kg/day	1
Rat		Oral-food	80 weeks, once/day	20% Decrease in survival of females	LOAEL = 2.56 mg/kg/day	1
Rat		Oral-food	18 months, once/day	24% Decrease in litter size, 57.2% mortality at 1 month	LOAEL = 6 mg/kg/day	1
Mouse		Oral-food	90-91 weeks, once/day	Hepatocellular carcinoma in males	LOAEL = 1.8 mg/kg/day for males and 2.3 mg/kg/day for females	1
Mallard					LD_{50} > 2080 mg/kg	2
American kestrel		Trophic	Lifetime as heptachlor epoxide	Production adversely affected	> 1.5 mg/kg in egg	3
Canada goose		Trophic	Lifetime as heptachlor epoxide	Reduction in hatching success	> 10 mg/kg in egg	3
Mink (*Mustela vison*)		Oral-diet		Reduced kit growth	LOAEL = 6.25 mg/kg	4
Freshwater aquatic organism			Chronic - heptachlor and heptachlor epoxide	Protection of aquatic life	AWQC = 0.0038ug/L	5

Table 4L-22

(Continued)

Organism	Dose	Exposure Route	Exposure Period	Effect	Endpoint	Reference
Heptachlor and Heptachlor Epoxide						
Saltwater aquatic organism			Chronic - heptachlor and heptachlor epoxide	Protection of aquatic life	AWQC = 0.0036ug/L	5
Meadow vole			Heptachlor		NOAEL = 1.58 mg/kg/day	6
Red fox			Heptachlor		NOAEL = 0.344 mg/kg/day	6
Snail (*Aplexa hypnorum*)		Medium	96 hours as heptachlor	Death	LC_{50} = 1450 μg/L	7
Bobwhite quail		Oral - diet	5 days as heptachlor	Death	LD_{50} =92 ppm	7
Ring-necked pheasant		Oral - diet	5 days as heptachlor	Death	LD_{50} =224 ppm	7
Daphid		Medium - static	48 hours as heptachlor		EC_{50} = 47 μg/L	7
Stonefly (*Pteronarcus californica*)		Medium - static	96 hours as heptachlor	Death	LC_{50} =1.1μg/L	7
Northern pike (*Esox lucius*)		Medium - static	96 hours as heptachlor	Death	LC_{50} =6.2 μg/L	7
Alga (*Selenastrum capricornutum*)			96 hours as heptachlor	Growth inhibition	EC_{50} = 26.7 μg/L	7
Fowler's toad (larva)			96 hours as heptachlor	Death	LC_{50} =440 μg/L	7
Channel catfish (*Ictalurus punctatus*)		Medium - static	96 hours as heptachlor	Death	LC_{50} =25 μg/L	7
Sheepshead minnow (*Cyprinodon Variegatus*)		Medium (saltwater), flow-through	96 hours as heptachlor	Death	LC_{50} =10.5 μg/L	7

Table 4L-22

(Continued)

Heptachlor is a man-made chemical that was used for killing insects in homes, buildings and on food crops. There are no natural sources of heptachlor or heptachlor epoxide. Heptachlor and heptachlor epoxide are described together because 20% of heptachlor is changed within hours into heptachlor epoxide in the environment and in living systems such as animals or humans by microsomal enzymes. The log soil organic carbon adsorption coefficient (log K_{oc}) for heptachlor is estimated to be 4.34. The log K_{oc} for heptachlor epoxide is estimated to range between 3.34 and 4.37. These log K_{oc} values indicate a very high sorption tendency, suggesting that these compounds will adsorb strongly to soil and are not likely to leach into groundwater in most cases. The organic matter content of the soil is another factor affecting mobility. Heptachlor and heptachlor epoxide are less likely to leach from soil with a high organic matter content. If released into water, then they will adsorb strongly to suspended and bottom sediment. Heptachlor and heptachlor epoxide are taken up by plants through the roots. The logarithm of the n-octanol/water partition coefficient (log K_{ow}) for heptachlor is 5.44 and for heptachlor epoxide is 5.40, indicating a high potential for bioconcentration and biomagnification in the food chain. A bioconcentration factor (BCF) of 20 has been calculated. A bioaccumulation factor (BAF) for earthworms for heptachlor epoxide has been calculated to be 10 (8). Heptachlor epoxide is more harmful than heptachlor, primarily because of its ability to be stored in fat for long periods of time. Biomagnification of heptachlor is not significant since heptachlor is metabolized to heptachlor epoxide readily by higher trophic levels. Because of the more persistent nature of heptachlor epoxide and its lipophilicity, biomagnification of heptachlor epoxide in terrestrial food chains is significant. Animals that ingested heptachlor in food before and/or during gestation had smaller litters, some offspring had damaged eyes, and some offspring did not survive long after birth. Infertility was also observed in studies with rats and mice. Lifetime exposure to heptachlor resulted in liver tumors (1). Heptachlor epoxide does not thin American kestrel eggs. These findings are in agreement with earlier studies of Canada geese. The presence of heptachlor epoxide in kestrel eggs, however, indicates food chain contamination (3).

Bioaccumulation (Heptachlor epoxide):
- Earthworm BAF = 10 (8)

Bioconcentration (Heptachlor):
- BCF = 9500 (9)

Bioconcentration (Heptachlor epoxide):
- BCF = 4500 (9)

Table 4L-22

(Continued)

Environmental Fate (Heptachlor):
- Log K_{oc} = 4.34
- Log K_{ow} = 5.44

Environmental Fate (Heptachlor epoxide):
- Log K_{oc} = 3.34-4.37
- Log K_{ow} = 5.40

References:

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Table 4L-23

Ecological Toxicity Profile for Indeno(1,2,3 cd)pyrene

Organism	Dose	Exposure Route	Exposure Period	Effect	Endpoint	Reference
Indeno(1,2,3-cd)pyrene						
Mouse		Skin	20 Days	Tumors	TD_{LO} = 40 mg/kg	1
Mouse	0.6 mg	Subcutaneous	1 time per month for 265 days	Sarcomas		2
Rat	4.15 mg/kg	Implant		Tumors; lung and thorax		3
Rodent	72 mg/kg-BW	Oral	Chronic	Carcinogen		4

Indeno(1,2,3-CD)pyrene [I(1,2,3-CD)P] is a polycyclic aromatic hydrocarbon (PAH) that is a byproduct of incomplete combustion. In environment, I(1,2,3-CD)P adsorbs strongly to soil and sediment (K_{ow}=3.2x10^6, K_{oc}=1.6x10^6). Lethality and systemic and reproductive toxicity data for I(1,2,3-CD)P is limited. Experimental evidence suggests that I(1,2,3-CD)P is carcinogenic to experimental animals via ingestion. Data is inconclusive regarding carcinogenic potential by dermal exposure. Some evidence of genotoxicity is also indicated. I(1,2,3-CD)P shows a strong potential for bioconcentration; however, PAHs are not likely to appreciably bioconcentrate in organisms that have microsomal oxidase, such as fish, since this enzyme enables the organism to metabolize PAHs (6). Those organisms lacking a metabolic detoxification enzyme system, namely phytoplankton, certain zooplankton, mussels *(Mytilus edulis)*, scallops *(Placopecten sp.)*, and snails *(Litternia littorea)*, tend to accumulate PAHs (6). Bioaccumulation, especially in vertebrate organisms, is considered to be short-term, and is not considered an important fate process (6). Volatilization from water will probably not be an important transport process (6).

Bioaccumulation:
- Earthworm BAF = 0.42 (5)

Bioconcentration:
- BCF = 59,407 (6)

Environmental Fate:
- Henry's Law Constant = 5.89×10^{-10} atm m^3/mol (6)
- Vapor Pressure = 1.0×10^{-10} mm Hg (6)
- Water Solubility = 0.062 mg/L (6)

References:
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4. Eisler, R. 1987. Polycyclic aromatic hydrocarbon hazards to fish, wildlife, invertebrates: a synoptic review. *U.S. Fish Wildl. Serv. Biol. Rep.* 85(1.11), 81 pp.
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Table 4L-24

Ecological Toxicity Profile for Lead

Organism	Dose	Exposure Route	Exposure Period	Effect	Endpoint	Reference
Lead						
Rat	10 g/kg	Oral-food	2 generations	Decreased pup weights; decreased pups/litter		1
Rat	0,0.5,5,50, 250 mg/L	Oral-water	6-7 weeks pre-breeding until 6-9 months post partum	Decreased maternal BW and delayed sexual maturation of female offspring; delayed locomotor development	LOAEL = 0.5 mg/kg/day	1
Rat	0.7 mg/kg/day	Oral-water	First 18-21 days of gestation	Reproductive toxicity	LOAEL = 0.04 mg/kg/day (female) LOAEL = 0.5 mg/kg/day (male)	2
Mouse	2.2 mg/kg or 3 mg/kg		Daily	Frequency of pregnancy reduced when dose given 3-5 days after mating		3
Mouse	20 mg/kg	Intrauterine	Single dose	Smaller litters; increased fetal deaths		3
Rat	5 mg/L	Oral-water	Lifetime	Reduced survival and longevity		3
Rat	200 mg/kg		Daily	50% of progeny dead in 3 weeks		3
Sheep	8 mg/kg		220 days	Death		3
Horse	2.4 mg/kg	Oral-food	Daily	Death		3
Horse	1.7 mg/kg	Oral-food		Lethal over several months		3

Table 4L-24

(Continued)

Organism	Dose	Exposure Route	Exposure Period	Effect	Endpoint	Reference
Lead						
Cattle	6-7 mg/kg		Daily for 2 months	Fatal		3
Cattle	220-400 mg/kg	Oral	Single dose	Fatal		3
Cattle	5 mg/kg		10-20 days	Blindness, 16% mortality		3
Bald eagle		Oral	121 days	20-25% decrease in hematocrit and hemoglobin concentration	0.8 mg/L blood level	4
Mallard	8 mg/kg	Oral-diet as lead nitrate	6 days	66% decrease in erythrocyte count		4
Herring gull, day-old chick	100 mg/kg	Interperitoneal injection	Singel dose	Reduced growth rate, reduced bill and wingbone length		13
Japanese quail	500 mg/kg	Oral-diet as lead acetate	Several weeks	Significant anemia, decreased hemoglobin concentration		4
Fathead minnow		Medium pH = 6-6.5		Death	LC_{50} = 810 ug/L	5
American kestrel	625 ppm 125 mg/kg	Diet		Death (40% mortality) Significant impairment of growth		12
Bald eagle		Trophic		Sub-lethal poisoning	> 0.6 ug/g blood level	6

Table 4L-24

(Continued)

Organism	Dose	Exposure Route	Exposure Period	Effect	Endpoint	Reference
Lead						
Freshwater aquatic organsim			Chronic	Protection of aquatic life	AWQC = 3.2 ug/L	14
Saltwater aquatic organism			Chronic	Protection of aquatic life	AWQC = 8.5 ug/L	14
Guppy				Delayed sexual maturity	2 ppm	10
Fathead minnow		Medium	96 hours as $PbCl_3$	Death	LC_{50} = 5.58 ppm	10
Mallard	6-8 mg/kg/day as lead nitrate			Lowered hematocrit and hemoglobin concentration		11
Meadow vole	As lead nitrate				NOAEL = 15.86 mg/kg/day	15
Red fox	As lead nitrate				NOAEL = 3.44 mg/kgday	15
Earthworm					LC_{50} = 3,000 mg/kg^{-1}	17
Terrestrial plant		Soil		20% reduction in plant growth	50 mg/kg	15

Lead is ubiquitous and is a characteristic trace constituent in rocks, soils, water, plants, animals and air. More than 4 million metric tons of lead are produced worldwide each year, mostly for the manufacture of storage batteries, gasoline additives, pigments, alloys, and ammunition. The widespread broadcasting of lead through anthropogenic activities, especially during the past 40 years, has resulted in an increase in lead residues throughout the environment. Lead is neither essential nor beneficial to living organisms and is toxic in most of its chemical forms. Excessive amounts of lead can cause growth inhibition in plants, as well as reduced photosynthesis, mitosis, and water absorption. In domestic and experimental animals, lead adversely affects weight, survival, behavior, litter size, and skeletal development, and induces teratogenic and carcinogenic responses in some species. Lead chemistry is complex. In water, lead is most soluble and bioavailable under conditions of low pH, low organic content, low concentrations of suspended sediments, and low concentrations of salts of calcium, iron, manganese, zinc, and cadmium (3). Models of lead speciation combined

Table 4L-24

(Continued)

with toxicity changes in the cell membrane predict that lead is more toxic at lower pH (4). Likewise for soils, mobility is dependent on factors such as pH, organic content, presence of inorganic colloids and iron oxides, and ion-exchange characteristics (2). Although mobility through soils to waters, both surface and groundwater, is not a major route of environmental exposure, exposure to lead-bearing soil particles either by ingestion or inhalation can be a route of exposure. Lead can be incorporated into the body by inhalation, ingestion, dermal absorption, and placental transfer to the fetus. Lead is an accumulative metabolic poison that affects behavior and the hematopoietic, vascular, nervous, renal, and reproductive systems. In general, organo-lead compounds are more toxic than inorganic lead compounds, food chain biomagnification is negligible, and younger, more immature organisms are most susceptible (3). Although lead does not biomagnify, its concentration in aquatic and terrestrial vertebrates tends to increase with the age of the animal. Distribution of lead is localized in hard tissues, such as bones and teeth (6). Ingestion of lead shot from hunter-killed or crippled waterfowl appears to be the major source of lead exposure to bald eagles. Alternatively, ospreys do not ingest those items which contain lead shot or hard tissues that have accumulated lead (7). The proposed lead criteria for the protection of natural resources and human health recommends for the mouse a daily total intake >0.05 mg/kg and for the mule deer total intake > 3 mg/day (3). Accumulation of lead with age has been reported in the pronghorn antelope, but the mule deer did not show accumulation in the same study. Background levels of lead in the livers and kidneys from mule deer and pronghorn antelope range from 0.6 to 0.9 μg/g (freeze-dried weight) (8). Lead concentrations of > 10 μg/g have been associated with diagnostic lead toxicosis in experimental mammals; however, mammals with behavioral and physiological signs of lead intoxication have died with < 5 μg/g (9). Plants and animals may bioconcentrate lead, but biomagnification has not been detected. Older organisms tend to contain the greatest body burden of lead. In aquatic organisms, lead concentrations are usually highest in benthic organisms and algae, and lowest in upper trophic level predators such as carnivorous fish (2).

Bioaccumulation:
- Earthworm BAF = 0.66 (16)

Bioconcentration:
- Oyster BCF = 6600 (14)
- Alga BCF = 92,000 (14)
- Rainbow trout BCF = 726 (14)
- Fish BCF = 42 (3)
- Insect BCF = 500 (3)
- Alga BCF = 725 (3)
- Oyster BCF = 536 (3)

References:

1. U.S. Environmental Protection Agency (EPA). 1984. *Health Effects Assessment for Lead.*

2. Agency for Toxic Substances and Disease Registry (ATSDR). 1990. *Toxicological Profile for Lead.*

3. Eisler, R. 1988. Lead hazards to fish, wildlife, and invertebrates: a synoptic review. *U.S. Fish Wildl. Serv. Biol. Rep.*

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6. Henny, C.J., L.J. Blus, D.J. Hoffman, R.A. Grove, and J.S. Hatfield. 1991. Lead accumulation and osprey production near a mining site on the Coeur d'Alene River, Idaho. *Arch. Environ. Contam. Toxicol.* 21:415-424.

Table 4L-24

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15. Oak Ridge National Laboratory, Environmental Sciences and Health Sciences Research Division, Oak Ridge, Tn. 1994. *Screening Benchmarks for Ecological Risk Assessment.*

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Table 4L-25

Ecological Toxicity Profile for 2-methylnaphthalene

Organism	Dose	Exposure Route	Exposure Period	Effect	Endpoint	Reference
2-Methylnaphthalene						
Rat	5 mg/kg	Oral		Lethal		1
Rat		Oral		Death	LD_{50} = 1,630 mg/kg	2
Rat		Feed	700 days, 6 days/week		NOAEL = 41 mg/kg/day	6
Mice	400 mg/kg	Intraperitoneal injection	Single dose	Complete exfoliation of bronchiolar epithelium		3
Mouse	1,000 mg/kg	Intraperitoneal injection	Single dose	20-40% lethality		3
Grass shrimp		Medium	96 hours	Death	LC_{50} = 1100 μg /L	4
Sheepshead minnow		Medium	96 hours	Death	LC_{50} = 2000 μg/L	4
Dungeness Crab		Medium	48 hours	Death	LC_{50} = 5.0 mg/L	5
Dungeness Crab		Medium	96 hours	Death	LC_{50} = 1.3 mg/L	5

2-Methylnapthalene (2-MN) is a polycyclic aromatic hydrocarbon (PAH) that is a component of crude oil and a byproduct of combustion. 2-MN adsorbs strongly to soils and is considered immobile in soils (Log K_{ow} = 3.86, K_{oc} = 8.5×10^3). Volatilization and biodegradation are the principle removal mechanisms for 2-MN from soils and surface water. Toxicological data for 2-MN is limited and somewhat contradictory.

Bioconentration:

- Crustacean BCF = 967-1625 (dimethylnaphthalenes)

Table 4L-25

(Continued)

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2. Lewis, Richard J. *Sax's Dangerous Properties of Industrial Materials*, 8th ed.

3. Agency for Toxic Substances and Disease Registry (ATSDR). 1989. *Toxicological Profile for Naphthalene and 2-Methylnapthatlene*.

4. Eisler, R. 1987. Polycyclic aromatic hydrocarbon hazards to fish, wildlife, invertebrates: a synoptic review. *U.S. Fish Wildl. Serv. Biol. Rep.* 85(1.11), 81 pp.

5. U.S. Department of Health and Human Services, Bethesda, Md. 1995. Hazardous Substances Data Base (HSDB) On-Line Computer Database.

6. Agency for Toxic Substance and Disease Registry (ATSDR). 1990. *Toxicological Profile for 2-Methylnaphthalene*.

Table 4L-26

Ecological Toxicity Profile for Phenanthrene

Organism	Dose	Exposure Route	Exposure Period	Effect	Endpoint	Reference
Phenanthrene						
Mouse		Oral	Not specified	Death	LD_{50} =700 mg/kg	1
Mouse	71 mg/kg	Applied to skin	Not specified	Tumor formation at site of application	Not specified	2
Mallard	4,000 mg/kg in diet (PAH mixture)	Oral	7 months	Increased liver weight and hepatic blood flow	Not specified	3
Grass shrimp		Medium	24 hour	Death	LC_{50} = 370 ug/L	3
Sandworm		Medium	96 hour	Death	LC_{50} = 600 ug/L	3
Freshwater aquatic organism			Chronic	Proposed AWQC - protection of aquatic life	LOEL = 6.3 ug/L	5
Saltwater aquatic organism			Chronic	Proposed AWQC - protection of aquatic life	LOEL = 4.6 ug/L	5
Mouse		Intravenous injection	Not specified	Death	LD_{50} = mg/Kg	4
Rat	150 mg/kg-BW	Intraperitoneal injection	Not specified	Changes in blood chemistry and nephrotoxicity	Not Specified	3

Phenanthrene is a polycyclic aromatic hydrocarbon (PAH) that is a byproduct of incomplete combustion. In the environment, phenanthrene adsorbs strongly to soil and sediment and is considered to be relatively immobile. Volatilization from water and soil is not expected to be significant, since most of the phenanthrene is expected to be adsorbed (7). It is not expected to leach to groundwater. Phenanthrene has tested negative as a complete carcinogen. Significant bioconcentration should occur in aquatic organisms. By the action of microsomal oxidase, however, fish are capable of rapidly metabolizing PAHs. Phananthrene is expected to be similarly degraded in fish, and therefore may not bioconcentrate significantly. (7) Some marine organisms have no aryl hydrocarbons hydroxylase

Table 4L-26

(Continued)

enzyme systems, namely phytoplankton, certain zooplankton, mussels *(Mytilus edulis)*, scallops *(Placopecten sp.)*, and snails *(Litternia littorea)*. Those organisms which lack a metabolic detoxification enzyme system tend to accumulate PAHs. (7)

Bioaccumualtion:
- Earthworm BCF = 0.12 (6)

Bioconcentration:
- Clam (24 hrs.) BCF = 32 (3)
- *Daphnia pulex* (24 hrs.) BCF = 325 (3)

Environmental Fate:
- $K_{oc} = 1.4 \times 10^4$
- Log $K_{oc} = 4.36$ (7)
- $K_{ow} = 2.4 \times 10^4$
- Log $K_{ow} = 4.57$ (7)
- Henry's Law Constant = 1.24×10^{-4} atm m^3/mol (7)
- Vapor pressure = 6.80×10^{-4} mm Hg (7)
- Water solubility = 1.29 mg/L (7)

References:

1. Lewis, R.J. 1987. *Sax's Dangerous Properties of Industrial Meterials.* Van Nostrand Reinhold, N.Y.

2. Agency for Toxic Substances and Disease Registry (ATSDR). 1989. *Toxicological Profile for Polycyclic Aromatic Hydrocarbons.*

3. Eisler, R. 1987. Polycyclic aromatic hydrocarbons hazares to fish, wildlife, and invertebrates: a synoptic review.

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5. Federal Ambient Water Quality Criteria. Federal Register Notice 57FR60848.

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7. U.S. Department of Health and Human Services, Bethesda, Md. 1995. Hazardous Substances Data Base (HSDB) on-line computer database.

Table 4L-27

Ecological Toxicity Profile for Pyrene

Organism	Dose	Exposure Route	Exposure Period	Effect	Endpoint	Reference
Pyrene						
Guinea pig	5 mmol	Dermal	Single dose	Phototoxic when subsequently exposed to UV light.		1
Rat, Mouse	50-90 ug/m3	Inhalation	22 months	Lung neoplasia 10x above controls.		2
Mosquito fish		Medium	96 hr	Death	TLm = 0.0026 mg/L	3
Rat		Oral	Acute	Death	LD_{50} = 2,700 mg/Kg	4
Mouse		Oral	Acute	Death	LD_{50} = 800 mg/Kg	4
Mouse	10 % pyrene solution	Applied to skin	Lifetime	No skin tumors		6
Mouse		IP injection	Single	Death	LD_{50} = 680 Kg-BW	6
Rat	150 mg/kg	IP injection	Single	Altered blood chemistry and nephrotoxicity		5
Mouse	127 mg/kg	Oral-Food	25 Days	Dialation of renal tubules		6

Pyrene is a polycyclic aromatic hydrocarbon (PAH) that is a byproduct of incomplete combustion. In the environment, pyrene adsorbs strongly to soil and sediment. It is not expected to leach to groundwater and will not hydrolyze or evaporate significantly. Laboratory tests with soil microbes indicate probable biodegradation. Bioaccumulation, especially in vertebrate organisms, is not considered an important fate process. Minimal to moderate bioconcentration of pyrene in aquatic ecosystems would be expected. Some marine organisms have no detectable aryl oxidase hydrocarbons hydroxylase enzyme systems, namely phytoplankton, certain zooplankton, mussels *(Mytilus edulis)*, scallops *(Placopecten sp.)*, and snails *(Litternia littorea)*. Those organisms which lack a metabolic detoxification enzyme system tend to accumulate PAHs. (8) Pyrene has been shown to be acutely toxic at high doses. Evidence suggests that pyrene may be slightly genotoxic. Pyrene is a questionable carcinogen.

Table 4L-27

(Continued)

Bioaccumulation:
- Earthworm BCF = 0.09 (7)

Bioconcentration:
- *Daphnia pulex* BCF (24 hrs.) = 2702 (6)
- Fathead minnow BCF = 600-970 (8)
- Goldfish BCF = 457 (8)
- Rainbow trout BCF, liver (21 days) = 69 (6)

Environmental Fate:
- $K_{oc} = 3.8\times10^{4}$
- Log K_{oc} = 4.58
- $K_{ow} = 8.0\times10^{4}$
- Log K_{ow} = 4.9
- Henry's Law Constant = 1.09×10^{-4} atm m^3/mol - 5.42×10^{-5} atm m^3/mol (8)

References:

1. Kochevar IE et al; Photochem Photobiol 36(1):6509(1982).

2. Heinrich U et al; Exp Pathol 29 (1):29-34(1986).

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7. Beyer, W.N. 1990. Evaluating soil contamination. *U.S. Fish Wildl. Serv. Biol. Rep.* 90(2), 25 pp.

8. U.S. Department of Health and Human Services, Bethesda, Md. 1995. Hazardous Substances Data Base (HSDB) on-line computer database.

Table 4L-28

Ecological Toxicity Profile for Trichloroethene

Organism	Dose	Exposure Route	Exposure Period	Effect	Endpoint	Reference
Trichloroethene						
Rat		Inhalation	4 hours	Death 50%	LC_{50} = 12.500 ppm	1
Mouse		Inhalation	4 hours	Death 50%	LC_{50} = 8,450 ppm	1
Rat		Inhalation	4 hours/day 13 days	Complete litter resorption	LOAEL = 100 ppm	1
Dog		Oral	1 time	Death	LD_{50} = 5,680 mg/kg	1
Mouse		Oral	5 days/wk 103 weeks	Death Liver tumors	LOAEL = 1,000 mg/kg	1
Rabbit		Dermal	1 time	Death	LD_{50} = 29 g/kg	1
Rat				death	LOAEL = 6,000 - 7,000 mg/kg	1
Cat				death	LOAEL = 6,000 - 7,000 mg/kg	1
Rabbit				death	LOAEL = 6,000 - 7,000 mg/kg	1
Rat		Inhalation	7 hours/day 5 day/week 6 months	significant reductions in body weight gain	400 ppm	1

Trichloroethene is insoluble in water, but highly soluble in lipids (2). Exposure to trichloroethene caused no embryo toxicity or teratogenicity in rats or mice (2).

Bioconcentration:
- BCF (derived from K_{ow}) = 32.4

Table 4L-28

(Continued)

Environmental Fate:

- Log K_{ow} = 2.42
- Henry's Law Constant at 25°C = 1.1×10^{-2} atm-m^3/moL
- Vapor Pressure at 25°C = 74 mmHg

References:

1. Agency for Toxic Substances and Disease Registry (ATSDR). 1990. *Toxicological Profile for Trichloroethene.*

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APPENDIX 4M

ECOLOGICAL ASSESSMENT SPREADSHEETS

APPENDIX M
LIST OF TABLES

Table 4M-1
Southeast Runway Fuel Spill Site - Ecological Quotients for the Northern Pike from Discharged Groundwater

Chemical	Conc in Water mg/L	Toxicity Data mg/kg	Reference	Uncert Factor	Toxicity Benchmark	Total EQ
1,2-Dichloroethane	2.54E-08	20	AWQC	1	20	1.27E-09
2-Methylnaphthalene	2.45E-06	2	LC50-minnow	10000	0.0002	1.23E-02
Acenaphthene	1.13E-09	0.52	AWQC	1	0.52	2.18E-09
Benzene	4.38E-09	5.3	AWQC	10	0.53	8.27E-09
Benzyl alcohol	7.17E-08	15	LC50-silverside	10000	0.0015	4.78E-05
Beryllium	9.02E-08	0.148	EC20-fish	10000	1.48E-05	6.10E-03
Chloroethane	3.39E-14	a	a	a	a	a
Chloroform	6.39E-10	1.24	AWQC	1	1.24	5.16E-10
Chloromethane	2.99E-12	27	LC50-silverside	10000	0.0027	1.11E-09
Di-n-butylphthalate	1.20E-08	1.8	LC50-trout	100	0.018	6.65E-07
Ethylbenzene	3.69E-08	50	LC100-salmon	10000	0.005	7.39E-06
Fluorene	3.48E-05	0.82	LC50-trout	100	0.0082	4.25E-03
m&p-Xylenes	1.29E-07	13.5	LC50-trout	100	0.135	9.56E-07
Naphthalene	2.05E-07	0.62	AWQC	1	0.62	3.30E-07
o-Xylene	4.79E-08	13.5	LC50-trout	100	0.135	3.55E-07
Phenanthrene	3.85E-09	0.0063	AWQC	1	0.0063	6.12E-07
Toluene	4.41E-16	17.5	AWQC	1	17.5	2.52E-17
Trichloroethene	3.30E-09	21.9	AWQC	1	21.9	1.51E-10

a = no toxicity information available
EQ pike = concentration in water/toxicty benchmark
Concentration in water = modeled groundwater concentrations, at a 5-feet range from shoreline (see Appendix 4C)

Table 4M-2
Southeast Runway Fuel Spill Site - Ecological Quotients for Aquatic Invertebrates

Chemical	Conc in GW mg/L	Toxicity Data mg/L	Reference	Uncert Factor	Toxicity Benchmark	Total EQ
1,2-Dichloroethane	2.06E-04	20	AWQC	1	20	1.03E-05
2-Methylnaphthalene	2.53E-02	1.1	LC50-shrimp	10000	0.00011	2.30E+02
Acenaphthene	1.17E-05	0.52	AWQC	1	0.52	2.25E-05
Benzene	2.69E-06	5.3	AWQC	1	5.3	5.08E-07
Benzyl alcohol	7.40E-04	15	LC50-fish	10000	0.0015	4.93E-01
Beryllium	9.31E-04	0.0053	AWQC	1	0.0053	1.76E-01
Chloroethane	3.50E-10	a	a	a	a	a
Chloroform	6.60E-06	1.24	AWQC	1	1.24	5.32E-06
Chloromethane	7.07E-09	27	LC50-bluegill	10000	0.0027	2.62E-06
Di-n-butylphthalate	1.24E-04	1.8	LOEC - daphnia	100	0.018	6.87E-03
Ethylbenzene	3.79E-04	275	LC50-shrimp	10000	0.0275	1.38E-02
Fluorene	3.59E-01	1	LC50-shrimp	10000	0.0001	3.59E+03
m&p-Xylenes	1.29E-03	13	LC50-fish	10000	0.0013	9.91E-01
Naphthalene	2.11E-03	0.62	AWQC	1	0.62	3.41E-03
o-Xylene	4.95E-04	13	LC50-fish	10000	0.0013	3.80E-01
Phenanthrene	3.98E-05	0.063	AWQC	1	0.063	6.31E-04
Toluene	9.22E-13	17.5	AWQC	1	17.5	5.27E-14
Trichloroethene	3.40E-05	21.9	AWQC	1	21.9	1.55E-06

a = no toxicity data available
EQ = Concentration in water/toxicity benchmark
Concentration in water = modeled groundwater concentrations discharging to the shoreline (see Appendix 4C)

Table 4M-3
Southeast Runway Fuel Spill Site - Ecological Quotients for the Spotted Sandpiper

Chemical	Conc in GW mg/L	Insect Uptake Factor	Conc in Invert mg/kg	SSP Intake mg/kg-day	Toxicity Data mg/kg	Reference	Uncert Factor	Toxicity Benchmark	% EQ Water	% EQ Invert.	Total EQ
1,2-Dichloroethane	2.06E-04	2	4.13E-04	1.26E-03	46.81	NOAEL-robin	1	46.81	98.21144	1.788562	2.69E-05
2-Methylnaphthalene	2.53E-02	1000	2.53E+01	1.53E+00	a	a	a	a	a	a	a
Acenaphthene	1.17E-05	2.6	3.05E-05	7.18E-05	a	a	a	a	a	a	a
Benzene	2.69E-06	4.27	1.15E-05	1.67E-05	a	a	a	a	a	a	a
Benzyl alcohol	7.40E-04	4	2.96E-03	4.59E-03	a	a	a	a	a	a	a
Beryllium	9.31E-04	19	1.77E-02	6.54E-03	a	a	a	a	a	a	a
Chloroethane	3.50E-10	a	a	a	a	a	a	a	a	a	a
Chloroform	6.60E-06	8	5.28E-05	4.24E-05	a	a	a	a	a	a	a
Chloromethane	7.07E-09	2.88	2.03E-08	4.34E-08	a	a	a	a	a	a	a
Di-n-butylphthalate	1.24E-04	57	7.05E-03	1.12E-03	0.14	NOAEL-robin	1	0.14	65.83178	34.16822	8.03E-03
Ethylbenzene	3.79E-04	144	5.46E-02	5.25E-03	a	a	a	a	a	a	a
Fluorene	3.59E-01	5000	1.80E+03	1.00E+02	a	a	a	a	a	a	a
m&p-Xylenes	1.29E-03	80	1.03E-01	1.33E-02	1940	NOAEL-quail	1000	1.94	57.85518	42.14482	6.87E-03
Naphthalene	2.11E-03	1000	2.11E+00	1.28E-01	40000	Dose-mallard	10000	4	9.895433	90.10457	3.20E-02
o-Xylene	4.95E-04	80	3.96E-02	5.12E-03	1940	NOAEL-quail	1000	1.94	57.85518	42.14482	2.64E-03
Phenanthrene	3.98E-05	325	1.29E-02	9.43E-04	4000	Dose-mallard	1000	4	25.25671	74.74329	2.36E-04
Toluene	9.22E-13	90	8.30E-11	1.00E-11	a	a	a	a	a	a	a
Trichloroethene	3.40E-05	17	5.78E-04	2.35E-04	a	a	a	a	a	a	a

Spotted Sandpiper Constants:		
Body weight (BW):	kg	0.047
Water Intake (WI):	L/day	0.67
Food Ingestion rate (FI):	kg/day	0.00744
Soil Ingestion fraction (S):	unitless	0.18
Food Ingestion fraction (F):	unitless	0.82
Home Range:	acres	2.5
Time on site:	months	5
Home Range Fraction (HR):	unitless	1
Site Area:	acres	6.32

EQ = sandpiper intake/toxicity benchmark
Intake = (HR/BW) x 0.42 x ((Conc in Invert x FI x FF) + (Conc in water x WI))
Conc. in Water = modeled groundwater concentrations discharged to the mudflats (see Appendix 4C)
a = no avian toxicity data available

Table 4M-4
Southeast Runway Fuel Spill Site - Ecological Quotients for Terrestrial Plants

Chemical	Conc in Soil mg/kg	Tox Data mg/kg	Reference	Uncert Factor	Toxicity Benchmark	Ecological Quotients
2-Methylnaphthalene	3.12E-02	a	a	a	a	a
Anthracene	4.93E-02	a	a	a	a	a
Benzo(a)anthracene	3.13E-01	a	a	a	a	a
Benzo(a)pyrene	4.96E-01	a	a	a	a	a
Benzo(b)fluoranthene	4.04E-01	a	a	a	a	a
Benzo(g,h,i)perylene	1.83E-01	a	a	a	a	a
Benzo(k)fluoranthene	4.15E-01	a	a	a	a	a
bis(2-Ethylhexyl)phthalate	2.85E-01	a	a	a	a	a
Chrysene	5.15E-01	a	a	a	a	a
Dibenz(a,h)anthracene	9.30E-02	a	a	a	a	a
Fluoranthene	4.35E-01	a	a	a	a	a
Indeno(1,2,3-cd)pyrene	2.40E-01	a	a	a	a	a
Lead	5.08E+01	50	LOEC	1	50	1.02E+00
Naphthalene	2.25E-02	a	a	a	a	a
Phenanthrene	1.49E-01	a	a	a	a	a
Pyrene	5.17E-01	a	a	a	a	a

a = no toxicity data available
EQ plant = Concentration in soil/toxicity benchmark

Table 4M-5
Southeast Runway Fuel Spill Site - Ecological Quotients for the Meadow Vole

Chemical	Conc in Soil mg/kg	log Kow	Plant Uptake Factor	Conc in Plants mg/kg	MV Intake mg/kg-d	Toxicity Data mg/kg	Reference	Uncert Factor	Toxicity Benchmark	% EQ Soil	% EQ Plant	Total EQ
2-Methylnaphthalene	3.12E-02	3.86	0.2274678	0.007097	0.0009644	1630	LD50-rat	6000	0.27166667	9.755756	90.24424	3.55E-03
Anthracene	4.93E-02	4.45	0.103729	0.0051138	0.0007757	430	LD50-rodent	6000	0.07166667	19.16329	80.83671	1.08E-02
Benzo(a)anthracene	3.13E-01	5.6	0.0224492	0.0070266	0.0018055	2	Dose-rodent	6000	0.00033333	52.27577	47.72423	5.42E+00
Benzo(a)pyrene	4.96E-01	6.19	0.0102372	0.0050776	0.0021183	10	LD50-rodent	6000	0.00166667	70.60593	29.39407	1.27E+00
Benzo(b)fluoranthene	4.04E-01	6.06	0.0121708	0.004917	0.0018212	40	Dose-rodent	6000	0.00666667	66.89201	33.10799	2.73E-01
Benzo(g,h,i)perylene	1.83E-01	6.5	0.0067764	0.0012401	0.0007039	0.8	Dose-mouse	6000	0.00013333	78.39607	21.60393	5.28E+00
Benzo(k)fluoranthene	4.15E-01	6.06	0.0121708	0.0050509	0.0018708	72	Dose-mouse	6000	0.012	66.89201	33.10799	1.56E-01
bis(2-Ethylhexyl)phthalate	2.85E-01	4.88	0.0585275	0.0166803	0.0029048	16.15	NOAEL-vole	1	16.15	29.58476	70.41524	1.80E-04
Chrysene	5.15E-01	5.6	0.0224492	0.0115613	0.0029706	99	Dose-rodent	6000	0.0165	52.27577	47.72423	1.80E-01
Dibenz(a,h)anthracene	9.30E-02	6.83	0.0043678	0.0004062	0.0003302	5	Dose-rat	6000	0.00083333	84.91684	15.08316	3.96E-01
Fluoranthene	4.35E-01	4.89	0.0577537	0.0251229	0.0043924	2000	Dose-rat	6000	0.33333333	29.86277	70.13723	1.32E-02
Indeno(1,2,3-cd)pyrene	2.40E-01	6.5	0.2	0.048	0.0066097	72	Dose-rodent	6000	0.012	10.94891	89.05109	5.51E-01
Lead	5.08E+01	b	0.04	2.032	0.4023568	15.86	NOAEL-vole	1	15.86	38.07107	61.92893	2.54E-02
Naphthalene	2.25E-02	3.29	0.15	0.003375	0.0004817	1780	LD50-rodent	6000	0.29666667	14.08451	85.91549	1.62E-03
Phenanthrene	1.49E-01	4.38	0.1138571	0.0169647	0.0025296	700	Dose-mouse	6000	0.11666667	17.7614	82.2386	2.17E-02
Pyrene	5.17E-01	4.9	0.0569902	0.0294639	0.005172	800	LD50-mouse	6000	0.13333333	30.14227	69.85773	3.88E-02

Meadow Vole constants:		
Food Ingestion Rate (FI):	kg/day	0.0049
Soil Ingestion Fraction (S):	unitless	0.024
Water Ingestion Rate (WI):	L/day	0.0053
Food Ingestion Fraction (F):	unitless	0.976
Body Weight (BW):	kg	0.039
Home Range:	acres	0.34
Site Area:	acres	6.32
Home Range Fraction (HR):	unitless	1

EQvole = vole intake/toxicity benchmark
Vole intake = (HR/BW) x [(Conc in plants x FI x F) + (Conc in soil x FI x S)]
Conc in plants = Conc in soil x plant uptake factor
a = no toxicity data available
b = Kow not applicable to metals

Table 4M-6
Southeast Runway Fuel Spill Site - Ecological Quotients for the Red Fox

Chemical	Conc in Soil mg/kg	MV BAF	Conc in MVs mg/kg	Red Fox Intake mg/kg-d	Toxicity Data mg/kg	Reference	Uncert Factor	Toxicity Benchmark	% EQ Soil	% EQ MV	Total EQ
2-Methylnaphthalene	3.12E-02	0.342	0.00033	2.18E-07	1630	LD50-rat	10000	0.163	73.1551	26.8449	1.33E-06
Anthracene	4.93E-02	0.34	0.00026	2.98E-07	430	LD50-mouse	10000	0.043	84.3369	15.6631	6.93E-06
Benzo(a)anthracene	3.13E-01	0.125	0.00023	1.64E-06	2	Dose-rodent	10000	0.0002	97.5581	2.44188	8.18E-03
Benzo(a)pyrene	4.96E-01	0.342	0.00072	2.66E-06	10	Dose-mouse	10000	0.001	95.1744	4.82565	2.66E-03
Benzo(b)fluoranthene	4.04E-01	0.32	0.00058	2.16E-06	40	Dose-mouse	10000	0.004	95.2312	4.76877	5.41E-04
Benzo(g,h,i)perylene	1.83E-01	0.34	0.00024	9.76E-07	0.8	Dose-mouse	10000	0.00008	95.6574	4.34264	1.22E-02
Benzo(k)fluoranthene	4.15E-01	0.34	0.00064	2.23E-06	72	Dose-rodent	10000	0.0072	94.9482	5.05176	3.10E-04
bis(2-Ethylhexyl)phthalate	2.85E-01	57	0.16557	3.08E-05	3.5	NOAEL-red fox	1	3.5	4.72416	95.2758	8.79E-06
Chrysene	5.15E-01	0.07	0.00021	2.66E-06	99	Dose-rodent	10000	0.0099	98.6177	1.3823	2.69E-04
Dibenz(a,h)anthracene	9.30E-02	0.34	0.00011	4.94E-07	0.01	Dose-rodent	10000	0.000001	95.9774	4.02258	4.94E-01
Fluoranthene	4.35E-01	0.08	0.00035	2.28E-06	2000	LD50-rat	10000	0.2	97.2723	2.72772	1.14E-05
Indeno(1,2,3-cd)pyrene	2.40E-01	0.34	0.00225	1.62E-06	72	Dose-rodent	10000	0.0072	75.4685	24.5315	2.25E-04
Lead	5.08E+01	0.42	0.16899	2.89E-04	3.44	NOAEL-red fox	1	3.44	89.6475	10.3525	8.40E-05
Naphthalene	2.25E-02	0.34	0.00016	1.44E-07	300	LOAEL-mouse	100	3	79.8282	20.1718	4.79E-08
Phenanthrene	1.49E-01	0.12	0.0003	8.14E-07	700	LD50-mouse	10000	0.07	93.3949	6.60508	1.16E-05
Pyrene	5.17E-01	0.34	0.00176	2.95E-06	69	LD50-mouse	10000	0.0069	89.4395	10.5605	4.27E-04

Red Fox Constants:		
Food Ingestion Rate (FI):	kg/day	0.268
Soil Ingestion Fraction (S):	unitless	0.028
Water Ingestion Rate (WI):	L/day	0.44
Food Ingestion Fraction (F):	unitless	0.972
Body Weight (BW):	kg	5.25
Home Range:	acres	1771
Site Area:	acres	6.32
Home Range Fraction (HR):	unitless	0.003569

EQ red fox = red fox intake/toxicity benchmark
Red fox intake = (HR/BW) x [(Conc in MV x FI x F) + (Conc in soil x FI x S)]
Conc in MV = BAF x Meadow vole intake
a = no toxicity data available

Table 4M-7
Southeast Runway Fuel Spill Site - Ecological Quotients for Terrestrial Invertebrates

Chemical	Conc in Soil mg/kg	Toxicity Data mg/kg	Reference	Uncert Factor	Toxicity Benchmark	Total EQ
2-Methylnaphthalene	3.12E-02	a	a	a	a	a
Anthracene	4.93E-02	a	a	a	a	a
Benzo(a)anthracene	3.13E-01	a	a	a	a	a
Benzo(a)pyrene	4.96E-01	1	LC50-sandworm	1	1	4.96E-01
Benzo(b)fluoranthene	4.04E-01	a	a	a	a	a
Benzo(g,h,i)perylene	1.83E-01	a	a	a	a	a
Benzo(k)fluoranthene	4.15E-01	a	a	a	a	a
bis(2-Ethylhexyl)phthalate	2.85E-01	a	a	a	a	a
Chrysene	5.15E-01	a	a	a	a	a
Dibenz(a,h)anthracene	9.30E-02	a	a	a	a	a
Fluoranthene	4.35E-01	a	a	a	a	a
Indeno(1,2,3-cd)pyrene	2.40E-01	a	a	a	a	a
Lead	5.08E+01	a	a	a	a	a
Naphthalene	2.25E-02	3.8	LC50-sandworm	10	0.38	5.92E-02
Phenanthrene	1.49E-01	6	LC50-sandworm	10	0.6	2.48E-01
Pyrene	5.17E-01	a	a	a	a	a

a = no toxicity data available
EQ invertebrate = Concentration in soil/toxicity benchmark

Table 4M-8
Southeast Runway Fuel Spill Site - Ecological Quotients for the Robin

Chemical	Conc in Soil mg/kg	Invert Uptake Factor	Conc in Invert mg/kg	Robin Intake mg/kg	Toxicity Data mg/kg	Reference	Uncert Factor	Toxicity Benchmark	% EQ Soil	% EQ Invert	Total EQ
2-Methylnaphthalene	3.12E-02	0.342	1.07E-02	1.33E-03	a	a	a	a	a	a	a
Anthracene	4.93E-02	0.342	1.69E-02	2.10E-03	a	a	a	a	a	a	a
Benzo(a)anthracene	3.13E-01	0.125	3.91E-02	7.01E-03	a	a	a	a	a	a	a
Benzo(a)pyrene	4.96E-01	0.342	1.70E-01	2.11E-02	a	a	a	a	a	a	a
Benzo(b)fluoranthene	4.04E-01	0.32	1.29E-01	1.64E-02	15	Dose-chicken	10000	0.0015	26.61753	73.38247	1.09E+01
Benzo(g,h,i)perylene	1.83E-01	0.32	5.86E-02	7.41E-03	a	a	a	a	a	a	a
Benzo(k)fluoranthene	4.15E-01	0.32	1.33E-01	1.68E-02	a	a	a	a	a	a	a
bis(2-Ethylhexyl)phthalate	2.85E-01	57	1.62E+01	1.51E+00	1.39	NOAEL-robin	1	1.39	0.20322	99.79678	1.09E+00
Chrysene	5.15E-01	0.07	3.61E-02	8.90E-03	a	a	a	a	a	a	a
Dibenz(a,h)anthracene	9.30E-02	0.342	3.18E-02	3.96E-03	a	a	a	a	a	a	a
Fluoranthene	4.35E-01	0.08	3.48E-02	7.92E-03	a	a	a	a	a	a	a
Indeno(1,2,3-cd)pyrene	2.40E-01	0.42	1.01E-01	1.20E-02	a	a	a	a	a	a	a
Lead	5.08E+01	0.42	2.13E+01	2.53E+00	500	Dose-quail	100	5	21.65223	78.34777	5.06E-01
Naphthalene	2.25E-02	0.34	7.65E-03	9.53E-04	4000	Dose-mallard	10000	0.4	25.45027	74.54973	2.38E-03
Phenanthrene	1.49E-01	0.12	1.79E-02	3.27E-03	4000	Dose-mallard	10000	0.4	49.16793	50.83207	8.17E-03
Pyrene	5.17E-01	0.09	4.65E-02	9.90E-03	a	a	a	a	a	a	a

Robin constants:

Food Ingestion Rate (FI):	kg/day	0.01597
Soil Ingestion Fraction (S):	unitless	0.104
Water Ingestion Rate (WI):	L/day	0.0105
Food Ingestion Fraction (F):	unitless	0.896
Body Weight (BW):	kg	0.077
Home Range:	acres	2
Site Area:	acres	6.32
Home Range Fraction (HR):	unitless	1
Time on Site	months	6

EQ robin = robin intake/toxicity benchmark
Robin intake = (HR/BW) x 0.5 [(Conc in invert x FI x F) + (Conc in soil x FI x S)]
Conc in invert = BAF x Conc in soil
a = no avian toxicity data available

Table 4M-9
Southeast Runway Fuel Spill Site - Ecological Quotients for the Kestrel

Chemical	Conc in Soil mg/kg	Robin BAF	Conc in Robin mg/kg	Kestrel Intake mg/kg-d	Toxicity Data mg/kg-d	Reference	Uncert Factor	Toxicity Benchmark	% EQ Soil	% EQ Robin	Total EQ
2-Methylnaphthalene	3.12E-02	0.342	4.54E-04	2.04E-06	a	a	a	a	a	a	a
Anthracene	4.93E-02	0.342	7.18E-04	3.22E-06	a	a	a	a	a	a	a
Benzo(a)anthracene	3.13E-01	0.125	8.76E-04	1.86E-05	a	a	a	a	a	a	a
Benzo(a)pyrene	4.96E-01	0.342	7.22E-03	3.24E-05	a	a	a	a	a	a	a
Benzo(b)fluoranthene	4.04E-01	0.32	5.24E-03	2.61E-05	15	Dose-chicken	10000	0.0015	89.55018	10.44982	1.74E-02
Benzo(g,h,i)perylene	1.83E-01	0.32	2.37E-03	1.18E-05	a	a	a	a	a	a	a
Benzo(k)fluoranthene	4.15E-01	0.32	5.38E-03	2.68E-05	a	a	a	a	a	a	a
bis(2-Ethylhexyl)phthalate	2.85E-01	57	8.62E+01	4.49E-02	0.78	NOAEL-hawk	1	0.78	0.036717	99.96328	5.76E-02
Chrysene	5.15E-01	0.07	6.23E-04	3.01E-05	a	a	a	a	a	a	a
Dibenz(a,h)anthracene	9.30E-02	0.342	1.35E-03	6.08E-06	a	a	a	a	a	a	a
Fluoranthene	4.35E-01	0.08	6.34E-04	2.55E-05	a	a	a	a	a	a	a
Indeno(1,2,3-cd)pyrene	2.40E-01	0.42	5.02E-03	1.65E-05	a	a	a	a	a	a	a
Lead	5.08E+01	0.42	1.06E+00	3.49E-03	125	Dose-kestrel	10	12.5	84.15517	15.84483	2.79E-04
Naphthalene	2.25E-02	0.34	3.24E-04	1.47E-06	4000	Dose-mallard	10000	0.4	88.52126	11.47874	3.68E-06
Phenanthrene	1.49E-01	0.12	3.92E-04	8.82E-06	4000	Dose-mallard	10000	0.4	97.68585	2.314148	2.21E-05
Pyrene	5.17E-01	0.09	8.91E-04	3.04E-05	a	a	a	a	a	a	a

Kestrel constants:

Food Ingestion Rate (FI):	kg/day	0.01096
Soil Ingestion Fraction (S):	unitless	0.1
Water Ingestion Rate (WI):	L/day	0.014
Food Ingestion Fraction (F):	unitless	0.9
Body Weight (BW):	kg	0.12
Home Range:	acres	499
Site Area:	acres	6.32
Home Range Fraction (HR):	unitless	0.012665
Time on site:	months	6

EQ kestrel = kestrel intake/ toxicity benchmark
Kestrel intake = (HR/BW) x 0.5 x [(Conc in sparrow x FI x F) + (Conc in soil x FI x S)]
Conc in robin = BAF x robin intake
a = no avian toxicity data available

Table 4M-10
Control Tower Drum Storage Area, South - Ecological Quotients for the Northern Pike from Discharged Groundwater

Chemical	Conc in Water mg/L	Toxicity Data mg/kg	Reference	Uncert Factor	Toxicity Benchmark	Total EQ
1,2-Dichloroethane	2.76E-10	20	AWQC	1	20	1.38E-11
4,4'-DDE	2.37E-13	0.000001	AWQC	1	0.000001	2.37E-07
Aldrin	3.06E-13	1.90E-06	AWQC	1	0.0000019	1.61E-07
beta-BHC	3.40E-13	0.032	EC-guppy	10000	0.0000032	1.06E-07
cis-1,2-Dichloroethene	1.24E-09	11.6	AWQC	1	11.6	1.07E-10
Dibromomethane	1.39E-14	a	a	a	a	a
Dieldrin	2.77E-13	1.9E-06	AWQC	1	0.0000019	1.46E-07
Endosulfan I	4.26E-76	5.60E-06	AWQC	1	0.0000056	7.60E-71
gamma-BHC	3.11E-13	0.023	LC50-salmon	10000	0.0000023	1.35E-07
Heptachlor	2.21E-50	3.80E-06	AWQC	1	0.0000038	5.81E-45
Heptachlor epoxide	1.21E-12	3.80E-06	AWQC	1	0.0000038	3.19E-07
Meta-&Para-Xylene	1.40E-09	13.5	LC50-trout	100	0.135	1.04E-08
trans-1,2-Dichloroethene	7.09E-11	11.6	AWQC	1	11.6	6.12E-12
Trichloroethene	2.57E-10	21.9	AWQC	1	21.9	1.17E-11

EQ pike = concentration in water/toxicty benchmark
Concentration in water = modeled groundwater concentrations, at a 5-feet range from shoreline (see Appendix 4C)
a = no toxicity information available

4M-11
Control Tower Drum Storage Area, South- Ecological Quotients for Aquatic Invertebrates

Chemical	Conc in GW mg/L	Toxicity Data mg/kg	Reference	Uncert Factor	Toxicity Benchmark	Total EQ
1,2-Dichloroethane	1.04E-06	20	AWQC	1	20	5.18E-08
4,4'-DDE	2.92E-07	0.000001	AWQC	1	0.000001	2.92E-01
Aldrin	3.78E-07	0.0000019	AWQC	1	0.0000019	1.99E-01
beta-BHC	2.21E-09	0.1	EC50-daphnia	100	0.001	2.21E-06
cis-1,2-Dichloroethene	1.53E-03	11.6	AWQC-acute	10	1.16	1.32E-03
Dibromomethane	6.59E-16	a	a	a	a	a
Dieldrin	1.16E-33	0.0000019	AWQC	1	0.0000019	6.13E-28
Endosulfan I	5.25E-70	0.0000056	AWQC	1	0.0000056	9.38E-65
gamma-BHC	3.41E-09	0.46	LC48-daphnia	100	0.0046	7.42E-07
Heptachlor	1.05E-113	0.0000038	AWQC	1	0.0000038	2.75E-108
Heptachlor epoxide	1.09E-06	0.0000038	AWQC	1	0.0000038	2.88E-01
Meta-&Para-Xylene	1.13E-07	13	LC50-fish	10000	0.0013	8.72E-05
trans-1,2-Dichloroethene	8.76E-05	11.6	AWQC-acute	10	1.16	7.55E-05
Trichloroethene	2.73E-04	21.9	AWQC	1	21.9	1.25E-05

EQ = Concentration in water/toxicity benchmark
Concentration in water = modeled groundwater concentrations discharging to the shoreline (see Appendix 4C)
a = no toxicity data available

4M-12
Control Tower Drum Storage Area South - Ecological Quotients for the Spotted Sandpiper

Chemical	Conc in GW mg/L	Insect Uptake Factor	Conc in Invert mg/kg	SSP Intake mg/kg-day	Toxicity Data mg/kg	Reference	Uncert Factor	Toxicity Benchmark	% EQ Water	% EQ Invert.	Total EQ
1,2-Dichloroethane	1.04E-06	2	2.07E-06	6.32E-06	46.81	NOAEL-robin	10	4.681	98.21144	1.788562	1.35E-06
4,4'-DDE	2.92E-07	12000	3.51E-03	1.93E-04	0.00032	NOAEL-heron	10	0.000032	0.906881	99.09312	6.03E+00
Aldrin	3.78E-07	3140	1.19E-03	6.70E-05	0.045	NOAEL-heron	10	0.0045	3.379314	96.62069	1.49E-02
beta-BHC	2.21E-09	1460	3.22E-06	1.89E-07	0.226	NOAEL-heron	10	0.0226	6.995805	93.00419	8.36E-06
cis-1,2-Dichloroethene	1.53E-03	23	3.53E-02	1.11E-02	a	a	a	a	a	a	a
Dibromomethane	6.59E-16	a	a	a	a	a	a	a	a	a	a
Dieldrin	1.16E-33	2700	3.14E-30	1.78E-31	0.045	NOAEL-heron	10	0.0045	3.908492	96.09151	3.96E-29
Endosulfan I	5.25E-70	59	3.10E-68	4.84E-69	17.22	NOAEL-robin	10	1.722	65.05188	34.94812	2.81E-69
gamma-BHC	3.41E-09	319	1.09E-06	7.98E-08	4.66	NOAEL-robin	10	0.466	25.6101	74.3899	1.71E-07
Heptachlor	1.05E-113	20	2.1E-112	7.40E-113	92	LC50-quail	10000	0.0092	84.59425	15.40575	8.05E-111
Heptachlor epoxide	1.09E-06	20	2.19E-05	7.74E-06	92	LC50-quail	10000	0.0092	84.59425	15.40575	8.42E-04
Meta-&Para-Xylene	1.13E-07	80	9.07E-06	1.17E-06	1940	NOAEL-quail	1000	1.94	57.85518	42.14482	6.05E-07
trans-1,2-Dichloroethene	8.76E-05	23	2.01E-03	6.34E-04	a	a	a	a	a	a	a
Trichloroethene	2.73E-04	17	4.65E-03	1.89E-03	a	a	a	a	a	a	a

Spotted Sandpiper Constants:		
Body weight (BW):	kg	0.047
Water Intake (WI):	L/day	0.67
Food Ingestion rate (FI):	kg/day	0.00744
Soil Ingestion fraction (S):	unitless	0.18
Food Ingestion fraction (F):	unitless	0.82
Home Range:	acres	2.5
Time on site:	months	5
Home Range Fraction (HR):	unitless	1
Site Area:	acres	3.78

EQ = sandpiper intake/toxicity benchmark
Intake = (HR/BW) x 0.42 x ((Conc in Invert x FI x FF) + (Conc in water x WI))
Conc. in Water = modeled groundwater concentrations discharged to the mudflats (see Appendix 4C)
a = no avian toxicity data available